Next-Gen

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AFTER PAGE 16

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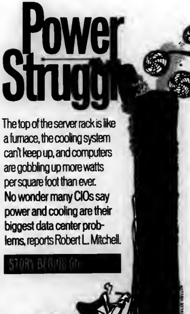

Power Struggle

The top of the server rack is like a furnace, the cooling system can't keep up, and computers are gobbling up more watts per square foot than ever. No wonder many CIOs say power and cooling are their biggest data center problems, reports Robert L. Mitchell.

STORY BEGINS ON [illegible]

Fast Exploits of Flaws Test Microsoft's Patching Policy

Users want fixes sooner, but not from third parties

BY JAIKUMAR VIJAYAN

The growing number of zero-day exploits seeking to take advantage of unpatched security flaws in Microsoft Corp.'s products is exposing some of the limitations of the company's monthly software update schedule, IT managers and analysts said last week.

MORE ON SECURITY
Denial-of-service attacks
Unauthorized offshore IT work
A government report

Even so, they added, it may be better in most cases for corporate users to wait for Microsoft's official updates instead of installing interim patches released by third-party developers as a stopgap measure.

Robert Olson, a systems administrator at Uline Inc. in Waukegan, Ill., said he would like to see Microsoft issue supplemental fixes for unpatched vulnerabilities that are actively being exploited, such as a flaw in Internet Explorer that malicious hackers were targeting for attacks last week.

At the same time, Olson said that Uline, a distributor of packaging and shipping materials, has no intention of using third-party patches to plug security holes, no matter how critical they are.

"Our opinion is that you open yourself to greater threats," he said, citing fears that a third-party patch could disrupt production applications, leaving users to resolve the problems without help from Microsoft.

Relying on third-party fixes "is another example of people getting overly focused on patches and not paying atten-

Patches, page 14

Nissan Corrects Steering on IT Under New CIO

Turns to in-house and multisourcing

BY PATRICK THIBODEAU

Seven years ago, during the heyday of mega outsourcing deals, Nissan North America Inc. was one of the companies at the forefront of the rush to hand off IT operations to a single vendor. But times have changed, and so has Nissan's IT management strategy.

Robert Greenberg, who became Nissan North America's CIO about 18 months ago, is taking back some of the IT work that the company outsourced to IBM in 1999 as part of a contract that at the time was valued at $1 billion over nine years. In addition, Greenberg is redirecting application maintenance, support and

Nissan, page 59

Business Skills Tip Hiring Scale

Outweigh tech savvy for new hires

BY ERIC LAI

Rupak Shah's computer science degree from the prestigious University of Illinois at Urbana-Champaign, coupled with his strong technical skills, might help him land a job interview with a corporate IT organization.

But the 22-year-old Chicago native's business savvy and entrepreneurial know-how — he built and operates a Web site that sells imported herbal supplements — are what would likely set him apart from the pack and bode well for his career.

That's the conclusion of a report released last week by the Society for Information Management, a Chicago-based organization for IT executives. SIM's survey, based on interviews last year with 96 IT managers at companies of all sizes, found that business skills account for half of the top 10 attributes IT managers say they will need from in-house staffers over the next three years. The other five preferred

Skills, page 14

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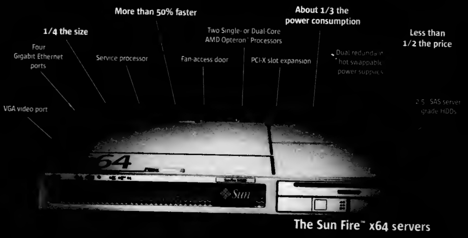
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In the Technology section: In this week's Future Watch, MIT Fab Lab research Neil Gershenfeld says we are on the threshold of the third digital revolution, one in which matter and information merge. **Page 34**

From Build to Buy

In the Management section: Freddie Mac's Joseph A. Smialowski (left) finds that shifting from a build to a buy software model requires new skills, new attitudes and new flexibility from business partners. **Page 45**

NEWS

6 **Nortel is creating** a services business unit and adding several new offerings, including one that involves repairing networking equipment from rival vendors.

6 **Hackers unleash** separate denial-of-service attacks against DNS servers operated by Network Solutions and a domain-name registrar in Germany.

12 **Business process outsourcing** is becoming more mainstream, but attendees at a conference said potential BPO users still face some hurdles, including a lack of standardization among vendors.

12 **SAS Institute** has bundled several data warehousing tools into a package that it hopes will persuade companies to use its storage and integration software.

16 **Microsoft will launch** an iSCSI storage device at Storage Networking World this week and is expected to discuss plans for an enterprise NAS system.

17 **Florida has notified** state employees of a security breach that may have exposed personal data stored in its payroll and human resources system.

20 **Global Dispatches:** Microsoft appeals a December antitrust ruling in South Korea; and Livedoor's new CEO vows to rebuild the Tokyo-based Internet company after the recent arrests of its founder and two other executives.

20 **Q&A: Oracle's John Wookey** tries to allay the apprehension users feel about the plan to fuse the company's applications.

TECHNOLOGY

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50 **It's About Trust.** Twenty-year IT auditing veteran Ross Wescott (below) says, please don't think of him as an adversary. His job is to help you succeed.

51 **All About Alignment.** Thomas Hoffman reviews books on IT convergence, customer-centricity, IT portfolio management and competitive advantage through business cycles.

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54 **Paul Glen** thinks solitary learning can take you only so far. He's noticed that most "eureka" moments come when you're in the flow of an intense conversation with peers.

60 **Frankly Speaking: Frank Hayes** thinks Microsoft's Internet Explorer patent problem will cost IT a lot more trouble than the BlackBerry patent flap. It just shows why we're all better off when vendors write big checks to make such problems go away.

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Tying Things Together

NETWORKING: A health care group finds that fingerprint scans offer the best combination of security, speed and ease of use. **QuickLink a8370**

Building a Better Mouse

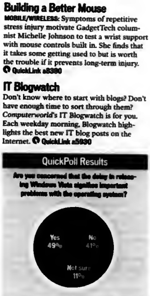
MOBILE/WIRELESS: Symptoms of repetitive stress injury motivate GadgetTech columnist Michelle Johnson to test a wrist support with mouse controls built in. She finds that it takes some getting used to but is worth the trouble if it prevents long-term injury. **QuickLink a8380**

IT Blogwatch

Don't know where to start with blogs? Don't have enough time to sort through them? *Computerworld's* IT Blogwatch is for you. Each weekday morning, Blogwatch highlights the best new IT blog posts on the Internet. **QuickLink a5030**

QuickPoll Results

Are you concerned that the delay in releasing Windows Vista signifies important problems with the operating system?



Take this week's QuickPoll at www.computerworld.com.

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AT DEADLINE

Georgia Agency's Database Breached

A Georgia Technology Authority database containing confidential data on more than 570,000 members of the state's pension plans was breached last month by an unknown hacker who took advantage of an unpatched flaw in an undisclosed security program. Officials said there is no evidence that the information, including names, Social Security numbers and bank account details, has been misused.

U.S. Urges EU to Treat Microsoft Fairly

U.S. officials last week urged the European Commission to be fair to Microsoft Corp. in its closed-door hearings on the EC's antitrust charges against the vendor. According to a memo from U.S. officials, Microsoft complaints about the case raise "substantial concerns" about the way it is being treated, said a source. The memo was distributed to embassies around Europe and to EU offices in Brussels.

Smither Promoted To CIO at Ford Motor

Nick Smither has been named vice president and CIO at Ford Motor Co., replacing Marv Adams, who has resigned as senior vice president and CIO to join Citigroup Inc. as CIO. Both moves become effective April 21. Smither, who joined Ford 26 years ago, most recently was executive director for global IT business operations and reported to Adams.

Several Charged in Card Fraud Cases

The U.S. Secret Service has made several arrests in connection with a wave of debit-card fraud that forced several banks and credit unions to reissue millions of cards in recent months. The arrests were part of a broader Secret Service investigation that has so far led to the arrests of 21 people on charges related to online identity theft and credit- and debit-card fraud.

Nortel Overhauls Services, Offers Multivendor Repairs

Says it will handle maintenance of products from networking rivals

BY MATT HAMBLEN

NORTEL NETWORKS Corp. last week said it is reorganizing its services offerings and adding several new ones, including a service that makes Nortel a single point of contact for maintenance of its telecommunications equipment and products from rival vendors.

As part of the changes, Nortel is creating a single business unit that will focus on services in five areas: systems and network integration, security, network optimization, maintenance and managed services.

The Brampton, Ontario-based vendor "has provided services for years, but not [under] a separate, intentional strategy and business unit," said Curt Hopkins, Nortel's vice president of sales and marketing for global services.

Likewise, the company previously offered to manage multivendor networks through its operations centers. But now it will also handle repairs and spare-parts management for non-Nortel equipment, Hopkins said. He added that about half of the network components installed at a typical Nortel customer site are supplied by other vendors.

John Tichenor, chapter representative for the New York City Nortel Users Group, said the new services direction might help Nortel to be seen as comparable to Cisco Systems Inc., which often is credited by users for its strong services orientation.

Tichenor is telecommunications manager at a law firm in Manhattan that uses both Nortel and Cisco gear. He asked that his employer not be identified.

Tichenor applauded Nortel's decision to start repairing networking devices from other vendors but said he isn't sure he would count on Nortel to fix his Cisco equipment. "It all depends on what level of repair [is required]," he said. "If you're simply swapping out a Cisco router, fine. But if it was a Cisco backbone switch with [throughput] fluctuations, I wouldn't want Nortel to handle that."

George Ahlenius, president of the Chicagoland Nortel Networks Users Association, isn't a big fan of Nortel's support operations. Ahlenius uses a Nortel voice switch and the company's CallPilot voice-mail system at the Illinois College of Optometry in Chicago, where he works as telecommunications administrator. But he said he isn't satisfied with the level of support that the school gets from Nortel.

ADDED SERVICES

- Integration of multivendor deployments of voice-over-IP and IP-based television technologies
- Consulting on security issues such as risk assessment, incident response, cyberforensics and policy development
- Hosting of call center systems as well as voice and multimedia networks
- End-user benchmarking aimed at optimizing the performance of wireless data networks

For example, the college currently has three unresolved trouble tickets logged with Nortel in connection with its voice-mail system, Ahlenius said. The school relies primarily on AT&T Inc. for basic network maintenance, he said, noting that the time it typically takes to get a response from Nortel's support staff "is more than we can afford in our business operations."

Zeus Kerravala, an analyst at Yankee Group Research Inc. in Boston, said that Nortel and other vendors trying to compete with Cisco can't avoid supporting and maintaining equipment that isn't their own.

"If you're not Cisco, you need to be willing to service multivendor environments," Kerravala said.

Hopkins said Nortel's new strategy includes "a sweeping simplification" of its services portfolio, which is being streamlined from 700 separate offerings to about 70. The company hopes to double its services revenue over the next three to five years, he added. ▸

Attacks Target DNS Servers in U.S., Germany

Network Solutions, Joker.com fend off denial-of-service hits

BY JAIKUMAR VIJAYAN

In similar incidents separated by only a few days, Domain Name System (DNS) servers at Network Solutions Inc. and a domain name registrar in Germany were hit by denial-of-service attacks that temporarily disrupted their systems.

Network Solutions was attacked last Tuesday and suffered degraded performance on its WorldNIC name servers for about 25 minutes before normal operations were restored, said a spokeswoman for the Herndon, Va.-based company. She declined to disclose the measures Network Solutions took to mitigate the attack.

Prior to the attack against Network Solutions, the DNS servers at CSL Computer Service Langenbach GmbH, a Dusseldorf, Germany-based company that operates a domain-name registration business called Joker.com, were targeted by what the company described as a "massive" series of denial-of-service attacks.

In an updated advisory that was posted on the Joker.com Web site last Tuesday, CSL and its business partner, EIS AG in Zug, Switzerland, said the attacks were "another order of magnitude than [we] experienced ever before." They began on March 20 and continued to cause interruptions through March 26, the companies said.

Quick Action

DNS services were completely interrupted for a short time after the attacks began, according to CSL and EIS. CSL responded by adding more domain-name servers, some of them hosted in external data centers. It also reserved more network bandwidth for Joker.com and set up automated procedures for reacting to unspecified incidents.

The various measures "seem to have helped, since the later attacks did not affect our systems as much as the first one," CSL and EIS said. They added that to provide further protection, they will "significantly increase and spread" the number of Joker.com name servers and take other undisclosed steps.

CSL and EIS said that about 15% of the Joker.com domains were affected by the attacks. According to Netcraft Ltd., an Internet performance monitoring company in Bath, England, more than 550,000 domains are registered with Joker.com.

Attacks against DNS servers have been rare until now but are viewed as being dangerous because they can bring down large numbers of Web sites.

Earlier last month, VeriSign Inc. said that about 1,500 organizations worldwide had been hit this year by unknown hackers who used botnets and DNS servers to launch denial-of-service attacks. In those cases, though, the DNS servers were used to amplify the effects of the attacks and weren't really targets themselves. ▸

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BRIEFS

U.S. Navy Extends EDS Agreement

The U.S. Department of the Navy has extended a multibillion-dollar outsourcing contract with Electronic Data Systems Corp. through September 2010. The extension adds more than $3 billion to the value of the contract, which covers the Navy/Marine Corps Intranet. EDS said it will disclose the new overall value of the N/MCI pact – once described by CEO Michael Jordan as "a mess" – during the company's earnings call in May.

U.K. Forces $450M Accenture Charge

Accenture Ltd. said a charge to cover expected losses from two contracts to upgrade the U.K. National Health Service's IT infrastructure led to a steep drop in its second-quarter profit. Accenture reported a charge of $450 million to cover projected losses on the NHS project, which will link 50 million patients in England with doctors and other health care providers by 2010.

Parliament OKs National ID Cards

Both houses of the U.K.'s Parliament have reached a compromise on a bill to move ahead with an effort to issue national identification cards. The House of Lords and the House of Commons both approved bills making the card optional until Jan. 1, 2010. A representative of Prime Minister Tony Blair said the opt-out date "strikes a sensible compromise."

Sony Buys 10% Stake in SGI Japan

Sony Corp. has bought a 10% stake in workstation and supercomputer sales and integration company SGI Japan Ltd. Sony and SGI Japan also signed an agreement to work jointly on selling computer systems to broadcasting organizations. NEC Corp. and NEC Soft Ltd. also hold stakes in SGI Japan, which was spun off from Silicon Graphics Inc. in 2001.

[ON THE MARK]

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY BUZZ BY MARK HALL

I CAN ALWAYS TELL WHEN SPIKE IS ONLINE!
Sweet.

You Are How You Type, And...

... BioPassword Inc. says it can prove it. The Issaquah, Wash.-based security software vendor has released what it claims is a one-of-a-kind, multilevel authentication tool that validates who you are based on how you type. CEO Mark Upson says the techniques used by the company's BioPassword Internet Edition software trace their roots back to the Morse code days, when telegraph operators were able to detect which of their colleagues was transmitting a message by how the dots and dashes were, er, dashed off by the sender. "There's a unique rhythm to a person's typing," Upson says. BioPassword can detect those rhythms in as few as eight characters, says Greg Wood, the company's chief technology officer. That makes BioPassword's technology ideal as a nonintrusive, second-level authentication process when key fobs, smart cards and biometric hardware are cumbersome for users.

Typing technique tells who you are, says UPSON.

Wood says the software captures "flight and dwell time," the unique microsecond sequences you make in between typing characters as well as the up, down and hold timing on each key. The software can identify individuals even when they're using different QWERTY keyboards than they usually do, he adds. BioPassword Internet Edition is aimed primarily at financial services firms and online retailers that need to authenticate their customers. Pricing starts at a one-time installation fee of $30,000, plus $1 per user each year. An Enterprise Edition release for use within companies is due in July with books into Microsoft Corp.'s Active Directory, with LDAP support scheduled to follow soon thereafter.

Keeping end users away from ...

... forbidden corporate data is just as important as leading them to the right material. That's the message from two search-engine CEOs who both took shots at Google Inc.'s enterprise search appliance, which needs augmenting from external security products. "You must integrate security into your search infrastructure," says Francois Bourdoncle, who runs Paris-based Exalead SA. "A search engine can reveal information to the wrong people." Exalead is making its entry into the U.S. market this year. Its One:Search software integrates with Active Directory so end users get responses only to queries they have rights to see, according to Bourdoncle.

Search and security go hand in hand

Laurent Simoneau, CEO of Coveo Solutions Inc. in Quebec City, agrees that security is critical, which is why his company's Enterprise Search 4.0 software includes permission and access rights down to the document level. Available this week, Version 4.0 indexes Notes and NetWare files for query and retrieval. It also can manage up to 100 million documents, compared with 10 million in Version 3.0. Later this year, Coveo plans to embed the search software in an appliance.

Tape continues to be a cost-effective ...

... data-backup technology. That claim comes — no surprise — from a tape drive vendor. Kelly Beavers, vice president of product marketing at Exabyte Corp., says that the Boulder, Colo.-based company's new VXA-172 drive will cost 17 cents per gigabyte on average, compared with an average cost of 27 cents per gigabyte for digital audio tape. The VXA-172 lists for $699 and can store 172GB on each tape. The product also can be configured in a $1,699 autoloader that can store a total of 1.7TB of data for unattended backup.

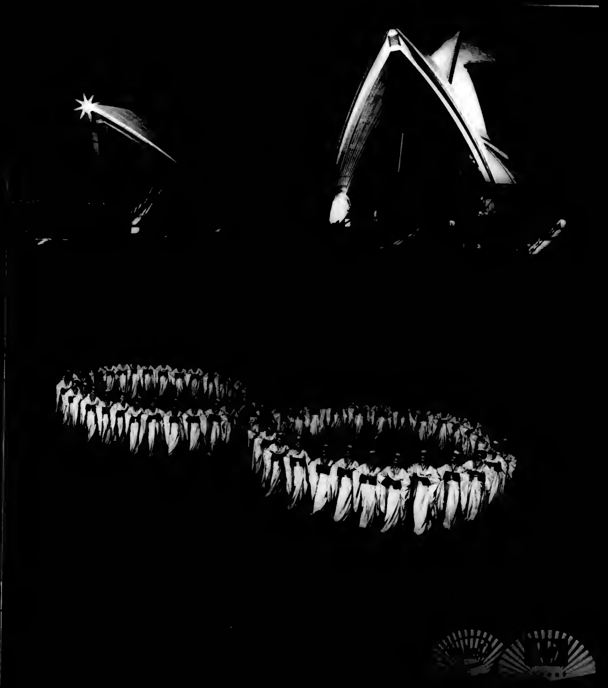
Exabyte's VXA-172 tape drive

Data storage is a big budget item, but a ...

... Byzantine IT backwater. Few of you will dispute that storage is taking a big slice from your IT budgets. Fewer will claim that managing storage is uppermost in your mind. And fewer still know how much storage capacity different business units are consuming. Those are the contentions of Mark Davis, CEO of CreekPath Systems Inc. in Longmont, Colo. Davis says storage management software has been targeted at storage administrators, leaving IT managers without the necessary tools for analyzing how to best leverage their storage services. He claims that CreekPath's Acuity software, which ships in mid-April, delivers more than 200 reports that can tell you what storage assets you have on your network and who is using how much capacity. It can also identify dependencies within your storage environment so that if you make changes to, say, a storage-area network, you'll know in advance how they will affect your information life-cycle management process, Davis says.

Think strategically about storage

He observes that identifying storage assets in a multivendor environment "is a tough problem." Vendors of disk drives, arrays, volume managers and the rest may claim that they follow standards, but they implement the standards in their own fashion, Davis says. Acuity's agent-free discovery technology alone could make the software useful to you. But the analytics you can apply might prove to be a gold mine for budgeting and for chargeback policies. The software starts at about $80,000. ◆



Identity & Access Management

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Microsoft

BPO Deals Increase, but Users Face Hurdles

Lack of standards hampers efforts to reduce costs through outsourcing

BY PATRICK THIBODEAU
NEW YORK

PRUDENTIAL Financial Inc. is just four years into a seven-year business process outsourcing contract. But Sharon Taylor, Prudential's vice president of corporate human resources, has the authority of a veteran when she describes her experiences with BPO.

Four years is "about as mature as it gets in this space," Taylor said at an outsourcing forum held here last week by market research firm IDC. Along with other attendees, she cited lingering start-up problems with the BPO concept, including a lack of standardization on the part of vendors.

Taylor helped build the business case for BPO at Newark, N.J.-based Prudential. In a 10-year, $700 million deal signed in early 2002, the insurance and financial services firm outsourced its human resources functions and related IT systems to Exult Inc., which was acquired by Hewitt Associates LLC two years later.

When Prudential negotiated the BPO deal, "there really wasn't much of a road map," Taylor said during a session at the IDC forum. Now she is helping to create a road map for other BPO users to follow.

Taylor, who recently was elected to chair the Human Resources Outsourcing Association in Washington, said the group is developing a list of BPO best practices as well as a set of "next practices" that users will likely require from vendors in the future.

P&G wants to be able to easily switch outsourcing vendors.

Many companies' wish lists include more standardized BPO services. That would help reduce costs and provide more flexibility, said William Metz, manager of global services and IT external business development at The Procter & Gamble Co. in Cincinnati.

P&G, which in 2003 outsourced its IT infrastructure to Hewlett-Packard Co. and its human resources operations to IBM, has adopted standard business processes internally and said it wants vendors industrywide to do likewise.

"We're going to push the industry in this direction," Metz said. If processes become standardized, he added, "then I can unplug [one vendor] and plug in someone else."

Worldwide spending on BPO totaled about $425 billion last year, according to Framingham, Mass.-based IDC, which forecasts that the market will grow by an average of 11% annually through 2009. "It's not quite mainstream, but it's on the path," said IDC analyst Katrina Menzigian.

However, the lack of universal support for business process standards increases IT costs for many BPO users, said Tom Davenport, a professor of IT and management at Babson College in Wellesley, Mass., who spoke at last week's conference.

Currently, applications often must be customized to meet the unique needs of different business processes within companies, he said. More standardized processes would help accelerate the adoption of BPO services and make it easier for users to evaluate potential vendors, Davenport added.

Last year, Wachovia Corp. signed BPO deals with vendors including Hewitt Associates and Genpact, an offshore services firm in New Delhi.

In addition to reducing the need to customize software, having more standardized business processes would help ease ongoing application-support costs, said Michael Monaghan, senior vice president of Wachovia's outsourcing strategy group.

Monaghan said that some of the business processes used at the Charlotte, N.C.-based financial services firm adhere to a set of internal standards, but others don't. "It's on a case-by-case basis," he said. "It's not universal or ubiquitous." ◆

SAS Touts Its Integration, Storage Tools for BI Projects

BY HEATHER HAVENSTEIN
SAN FRANCISCO

SAS Institute Inc. last week unveiled a strategy aimed at persuading companies to use its storage and data-integration tools rather than transactional databases to build business intelligence systems.

Executives at the Cary, N.C.-based company touted its new Enterprise Intelligence Platform — which bundles SAS's multidimensional database and data-integration products with its BI and analytics tools into a package for enterprise users — as the centerpiece of the new strategy.

The goal, officials said during the annual SAS user conference here last week, is to convince customers that the SAS products can replace relational database management systems, which have traditionally been used to store BI data for analysis.

IMS Health Inc., a Fairfield, Conn.-based provider of market intelligence data to pharmaceutical and health care companies, has started a proof-of-concept project to migrate its 66TB data warehouse to the SAS Enterprise Intelligence Platform, said Christopher Nickum, global practice leader for sales and account management. He declined to identify the company's current warehouse technology.

Nickum hopes that the SAS tools will let external users from pharmaceutical companies perform faster queries using more-recent data than the current system allows. The migration project will take several years, he said.

Christopher McCann, president of 1-800-Flowers.com Inc. in Carle Place, N.Y., said his company needs an enterprise BI platform in its effort to build a system that can use data from transactional systems in real time to support operational decisions like cross-selling.

The company is two years into the three-to-five-year project using SAS tools to build an information-delivery framework that will give users departmental views of data, he said.

"We would need this enterprise platform to understand customer behavior across these different brands," McCann said. "I need an analytic capability outside the transactional systems."

The retailer currently uses SAS's enterprise BI tools and data mining product.

John Enriquez, vice president of IT at Pearl River Resort in Choctaw, Miss., said he will rely on SAS integration tools in a new project.

Pearl River's project will involve pushing real-time data about customer behavior obtained though player-tracking systems to floor supervisors for upselling while a player is in a casino.

The casino operator used SAS integration tools to quickly adjust its marketing plan after Hurricane Katrina to attract customers from hard-hit areas such as Biloxi and Gulfport, Miss., and New Orleans, according to Enriquez.

However, not all SAS users will need the data storage or integration tools. Grant Felsing, decision support manager at lawn mower engine manufacturer Briggs & Stratton Corp., said he doesn't need all of the bundled offerings to produce management reports detailing inventory and sales figures. For example, by analyzing two-thirds of warranty data, he can identify overarching trends, Felsing said.

Keith Gile, an analyst at Forrester Research Inc., said companies might initially resist a new storage system from SAS for BI, but as IT is tasked by the business with delivering more detailed data for decision support, the response will likely change as they seek systems that can quickly deliver the most data.

The integration offerings in the SAS bundle include a Customer Data Integration Server and an updated Enterprise Data Integration Server that adds data quality tools.

SAS officials pledged at the conference that they plan to boost research and development spending on integration technology by 15% in each of the next two years. ◆

The Paradox:

Open network access is good for business.
Open network access is bad for security.

Proven Security

Continued from page 1

Patches

tion to other compensating controls" for mitigating security risks, said Lloyd Hession, vice president and chief technology officer at BT Radianz, a New York-based provider of telecommunications services to the financial industry.

Hession said he thinks that for an IT manager to even consider installing a third-party patch, "the risks to your environment have to be severe and hard to mitigate by any other means."

The debate about the wisdom of using third-party patches was renewed last week amid considerable concern that the flaw in IE could be used by hackers to take complete control of vulnerable systems. Fueling the concerns was the public availability of sample attack code, as well as reports by Websense Inc. that more than 200 malicious Web sites had been set up to try to exploit the flaw.

Microsoft said it planned to issue a patch for the flaw as part of its next monthly update release on April 11, although the company added that it would act sooner if warranted.

Two security software vendors, Determina Inc. in Redwood City, Calif., and eEye Digital Security in Aliso Viejo, Calif., stepped into the breach and released interim fixes for users who didn't want to wait for Microsoft's patch.

It was the second time this year that third-party developers have released patches for zero-day flaws ahead of Microsoft. In January, a programmer in Belgium named Ilfak Guilfanov issued a patch designed to provide a temporary fix for the Windows Metafile flaw, a far more serious vulnerability that did eventually prompt Microsoft to release an out-of-cycle patch.

Although unofficial patches can be useful in some cases, it's unlikely that many businesses — especially larger ones — will deploy them, said Andrew Jacquith, an analyst at Yankee Group Research Inc. in Boston. Most IT managers "would really rather wait" than run the risk of implementing an untested patch, he said.

Bill Cassada, enterprise network administrator at Healthways Inc., a health care services company in Nashville, said that work-arounds are often available to help users mitigate the risks of unpatched flaws. With the latest vulnerability, for instance, all that needs to be done to protect systems is to turn off the Active Scripting function in IE, Cassada said.

Quality Concerns

Microsoft is looking at ways to provide speedier fixes for zero-day flaws, said Stephen Toulouse, security program manager at the company's Security Response Center. But, he added, "there are some huge challenges to that."

First and foremost is the issue of quality control, Toulouse said. Microsoft must ensure that its updates work properly and support a wide range of platforms. "We can't leave anybody behind," he said. "And unfortunately, [a patch] might be introducing new problems. So whenever we look at even a quick hack, it's got to be of quality."

PatchLink Corp., a Scottsdale, Ariz.-based vendor of patch management software, surveyed 250 IT managers in February. More than 60% said they would like software vendors to release patches immediately when exploit code is in the wild. But the survey also showed that many IT professionals remain skeptical about using third-party patches, according to PatchLink.

In January, PatchLink made Guilfanov's WMF patch available to its customers. "About 25% downloaded it and took a look at it," including several large government organizations, said Chris Andrew, PatchLink's vice president of security technologies. But in the end, he said, the number of companies that implemented the patch "was probably limited to a handful." ▸

Robert McMillan of the IDG News Service contributed to this story.

Security Risk

Continued from page 1

Skills

skills include a mix of project management and technical talents, though the latter, because they are client-facing, also require some business skills.

"This is a long-standing issue," said Kate Kaiser, an associate professor of IT at Marquette University in Milwaukee and the report's primary author. "But it's now more important than ever to have business skills. Companies are more aware than ever [about] what IT can do for them."

In contrast to the hiring freezes that graduates faced after the dot-com crash, the overall IT workforce is expected to remain stable until at least 2008, the report found.

As some jobs — especially technical ones in larger organizations — continue to be outsourced, IT positions emphasizing business and management skills, such as business process re-engineering or project planning, are likely to be retained or created, according to the report.

That demand offers opportunities to young IT workers with the right skills and mindset, said Kaiser. She pointed to two former students who were promoted from programming to project management jobs in just two years rather than the five or more years such a climb typically requires.

"The time period one spends as a programmer is becoming compressed," Kaiser said.

"The average age of CIOs I meet today is five years younger than it was a decade ago," said Stephen Pickett, president of SIM and CIO at trucking company Penske Corp. in Bloomfield Hills, Mich.

Still, many young IT job seekers haven't gotten the message.

Many are less like Shah and more like Thomas Tanaka, a recent computer engineering graduate, also from the University of Illinois. Apart from some general economics classes, the 26-year-old avoided taking business and management courses. "My technical courses already took up most of my time," Tanaka said.

Although the Santa Clara, Calif., resident has mostly looked for entry-level software jobs with IT vendors, he recently interviewed with a financial firm for an in-house IT position. His lack of a business background was quickly exposed.

"They didn't ask me many technical questions during the interview," Tanaka said.

Mixed Messages

IT managers are part of the problem, because they often send mixed messages to job seekers. CIOs told Kaiser that although they continue to hire entry-level workers mostly for their technical skills, what they really deem most important for in-house IT workers are business and management skills — especially the ability to communicate well.

"I'm always shoving down my students' throat the importance of writing well, doing presentations and listening," she said. "They just think I'm being weird."

Even in the more technically specialized area of mainframe computing, business skills are essential, said Jim Michael, secretary of Share, a Chicago-based IBM mainframe users group. Overshadowed by more glamorous Web-related jobs, mainframes are enjoying a stealthy resurgence and are a promising area for recent graduates.

"I don't think the next generation of zSeries professionals should go and get a business degree," Michael said. "But if you want to make a difference, you'd better be able to talk about how IT can drive business value."

Kaiser suggests that students take a healthy sampling of management and business courses while obtaining a management degree in information science or IT.

Pickett believes that universities are starting to adjust requirements for their computer science or computer engineering majors. "When I graduated with my computer science degree, I had to go back for my MBA several years later to catch up," he said. "I think universities are moving quickly to create graduates with more blended skills." ▸

Survey Results

A Society for Information Management survey of 98 IT executives between last May and October found:

- The total IT workforce – including in-house staffers, contractors and full-time equivalents – will remain stable from 2005 to 2008.
- Organizations, especially larger ones, will increase their use of outsourcing.
- Large organizations will increase their use of domestic outsourcing firms with workers located offshore.
- At large companies, programming skills are most likely to be outsourced.
- Fortune 500 organizations are hiring midlevel employees such as analysts, senior systems analysts and project managers.
- Baby boomer retirements aren't likely to be a factor until 2011.

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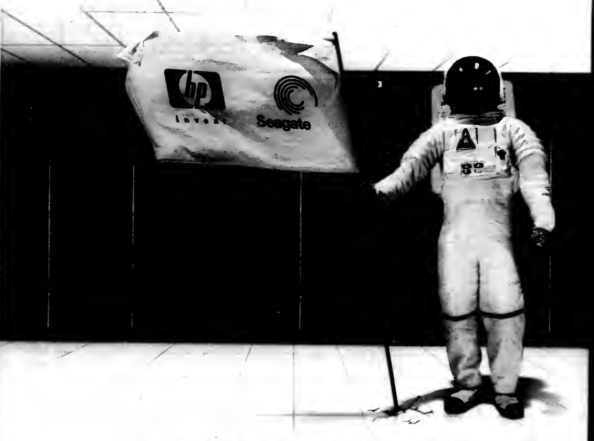

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BRIEFS

Qualcomm Files Suit Against Broadcom

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Microsoft Exchange Mail Services Debut

Microsoft Corp. has brought out four managed services it gained from its purchase of FrontBridge Technologies Inc. last year. Microsoft said it has rebranded the e-mail managed services, which include Exchange Hosted Filtering, Exchange Hosted Encryption, Exchange Hosted Archive and Exchange Hosted Continuity. They are being sold as add-ons to the hosted version of Microsoft Exchange Server.

Google to Issue More Shares to Raise $2.1B

Google Inc. plans to issue an additional 5.3 million shares of stock to raise $2.1 billion for working capital, expenses and possible acquisitions of complementary businesses and technologies. Google made the move despite holding $8 billion in cash at the end of 2005. The company used funds from earlier offerings to purchase several firms and invest in America Online Inc.

Microsoft Plans All-Out Assault on NAS Market

Will launch iSCSI initiator this week, clustered enterprise NAS system later

BY LUCAS MEARIAN

MICROSOFT CORP. this week plans to launch an iSCSI initiator that allows servers to perform diskless boots from storage-area networks without expensive and specialized host bus adapter (HBA) network cards.

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The joint effort aims to allow the use of a common network interface card to transfer block-level data between IBM servers and Microsoft back-end storage devices.

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Integrating the iSCSI initiator and the BladeCenter management software would greatly reduce the complexity of Dickinson Wright's storage systems, Hunt said.

HUNT: iSCSI/BladeCenter integration should simplify storage.

Matt Wineberg, worldwide product marketing manager for IBM's BladeCenter, called Microsoft's iSCSI initiator "an attractive diskless-boot alternative" that won't "break the bank."

HBA cards cost from $600 to $800 for blade servers, according to industry analysts.

"We expect the performance [of the Microsoft-IBM offering] to be good or better than systems with an HBA," Wineberg said.

Lorenson said the later enterprise NAS offering will be included in a future upgrade to Microsoft Windows Storage Server 2003 R2, whose iSCSI and NAS technology currently targets small and midsize businesses.

The updated NAS offering will be more competitive with higher-end offerings from storage leaders such as EMC Corp. and Network Appliance Inc., Lorenson said.

Lorenson wouldn't say when the enterprise NAS upgrade will ship.

Brian Garrett, an analyst at Enterprise Strategy Group Inc. in Milford, Mass., said that although Microsoft's low-end product has been quite successful, the company will have a much harder time breaking into the high end, long dominated by vendors such as EMC and NetApp.

In a recently published report on Microsoft's NAS and iSCSI products, Tony Asaro, another analyst at Enterprise Strategy Group, recommended that companies running mostly Windows-based systems with "some mix of Linux/Unix" should look closely at the Microsoft offerings when evaluating NAS systems. ◆

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Vendors Target Small, Midsize Firms at SNW Event

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For example, Dell Inc. and EMC Corp. are unveiling a jointly developed follow-on offering to their entry-level AX100/AX100i storage-area network system.

Howard Shoobe, senior manager of network-attached and entry storage at Dell, said that 80% of the older products' customers were first-time SAN users.

The new AX150/AX150i hardware, scheduled to ship this month for $5,600, doubles the performance of the earlier model by using the Serial ATA II specification, he said.

IBM will be releasing the StorServer EZ Backup Appliances, which come preconfigured with IBM Tivoli management software and are available in disk-to-disk, disk-to-tape and disk-to-disk-to-tape versions. Pricing starts at $5,000.

Richard Villars, vice president of storage systems at IDC in Framingham, Mass., said even users at smaller firms need to connect more of their systems to SANs, because unconnected storage absorbs a lot of management overhead.

"If SANs are really going to pay off, they can't just be for the biggest applications and the biggest servers," he said.

In other news from the conference, WysDM Software Inc. in New York intends to bring out Version 3.5 of its WysDM for Backups and WysDM for File Servers data protection management software. Available now, the software starts at $15,000 for 50 users for the backup product and $500 for the server product.

Doug Bovie, manager of infrastructure management at Equant BV, a hosting services company in Amsterdam, plans to test the new version's analysis features. "There's some built-in intelligent analysis, which may [point out] possible errors, possible problems," he said.

From his base in Frankfurt, Bovie manages a team that backs up 50TB of data daily from more than 2,000 systems across three continents.

Hitachi Data Systems Corp. plans to bring out the TagmaStore Adaptable Modular Storage model AMS1000, which is 70% faster than its predecessor, the 9585 modular system, according to Hubert Yoshida, chief technology officer at the Santa Clara, Calif.-based company.

The AMS1000 provides up to 16GB of storage that can have up to 32 logical partitions, he said. Shipping now, the device starts at $80,000.

Symantec Corp. will be adding a remote-office disk-to-disk backup application to its flagship NetBackup product line. The company gained the new NetBackup PureDisk offering with its acquisition of Belgium-based DataCenter Technologies NV last year, said Kris Hagerman, senior vice president of Symantec's storage and server management group.

Symantec plans to charge $16,000 per terabyte of capacity on the PureDisk appliances. That capacity does not have to reside on a single appliance but can be spread among multiple offices, Hagerman added.

– SHARON FISHER AND LUCAS MEARIAN

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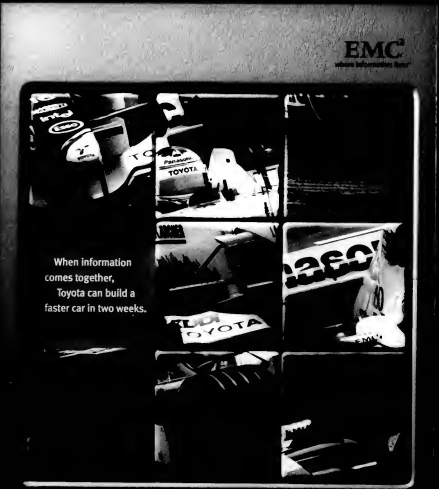
Vol. 1, Issue 1, April 2006

Next-Gen IT

A SERIES FROM THE EDITORS OF COMPUTERWORLD AND CIO

The Shift to SOA

ady for IT's next big thing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EDITORS' NOTE

Joining forces:

Girding for Seismic Shifts

CIO editor in chief
ABBIE LUNDBERG

Computerworld editor
in chief **DON TENNANT**

The metaphor of IT being part of an organization's foundation is no longer apt; the 21st century enterprise is built with information, and the technology that enables its flow, embedded in every beam of the structure. And there are important changes taking place within that core IT framework.

Computerworld and *CIO* have joined forces to explore some of those shifts and what they mean for today's organizations and IT leaders. We'll tell you what is happening, why and what you should do about it.

In this first issue of what we envision as an ongoing series, we cover one of the most profound developments in the history of IT: the shift to a service-oriented architecture.

SOA is the logical conclusion (and the tangible expression) of where IT has been heading for the past 20 years. It integrates business and technology in a truly meaningful way.

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This is particularly critical now, as CEOs turn their attention to top-line growth and innovation while continuing to emphasize efficiency and productivity. SOA serves both the entrepreneur and the bean counter.

NEXT GEN ONLINE

To give you a well-rounded view of SOA, we've included a piece on **"Pulling Together an SOA Strategy" (page 4)** and another on **"The SOA Toolbox" (page 10).** We wrap it up with *Computerworld* columnist Mark Hall's take on **"An SOA State of Mind" (page 14).**

In future issues, we'll look at other parts of the corpus IT: subjects like "Rearchitecting the Data Center," "Extending the IT Supply Chain" and "Security for the Next-Gen IT Infrastructure."

We'll be gathering all this content and more in a special online site: **ITNextGeneration.com.** Please visit us there and join this essential discussion of the issues you and your peers are confronting as the next generation of information technology unfolds. ◆

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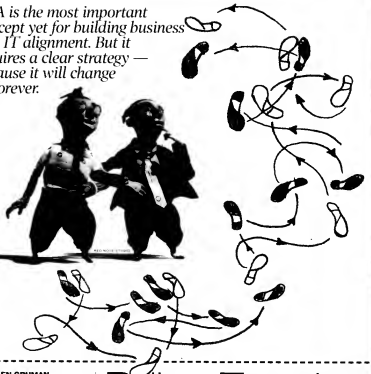
Pulling Together an SOA Strategy

SOA is the most important concept yet for building business and IT alignment. But it requires a clear strategy — because it will change IT forever.



RED NOSE STUDIO

BY GALEN GRUMAN

The concept of service-oriented architecture has gained real steam among CIOs in the past year, promising a way to more quickly build and adapt software functionality to deliver new, more flexible business processes.

A November 2005 Yankee Group Research Inc. survey of 306 U.S. organizations found that all had started or planned to start SOA initiatives within two years. Using an SOA lets you "craft enterprise-like functionality across hundreds of moving parts," says John Halamka, CIO at Care-

CONTINUED ON PAGE 6

Five new reasons why APC is preferred 3 to 1* for data center protection

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Group Healthcare System in Boston.

Properly deployed, SOA puts business processes — rather than software — in the driver's seat. By piecing together functionality and data from almost any application and orchestrating them to help automate a business process, IT can break the boundaries imposed by many mainframe and enterprise applications. The SOA approach also encourages reuse of these services, reducing development efforts over time and ensuring greater consistency across processes.

For example, Boston-based research firm Aberdeen Group Inc. predicts that a fully implemented SOA will reduce development costs by 25%, or about $53 billion over five years, across the 2,000 largest firms worldwide. The Guardian Life Insurance Company of America in New York has seen a 30% drop in such costs, says Jaime Sguerra, chief architect.

But SOA means dramatic change for most IT departments. The skills required include expertise in object-oriented development, business analysis and complex service orchestration. Get busy finding these people: By 2008, 80% of development projects will be based on the SOA model, Gartner Inc. predicted in a March 2005 report.

Though by no means easy, SOA is the most important blueprint yet devised for achieving business and IT alignment. It can help IT move from being just a cost center and technology provider to becoming the key enabler of critical business processes.

Leading Change

A December 2005 Aberdeen Group study of 284 companies shows that CIOs lead SOA efforts 40% of the time. Even though SOA promises clearer business benefits than traditional technology efforts, business managers lead SOA efforts just 18% of the time. CIOs have the advantage of both managing the IT staff that implements the SOA and of being neutral in business-unit turf battles.

"Our real challenge was getting our 76 agencies to share," says Suzanne Peck, chief technology officer of the District of Columbia, which in a five-year SOA effort has collapsed 370 applications into nine sets of cross-agency business services. SOA gives CIOs the strategy they need for bringing speed, flexibility and innovation to business processes.

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[illegible] UMBIA

CIOs routinely hear complaints from business management about how inflexible and costly the IT infrastructure is, and how long it takes to deploy applications. SOA forces IT to understand business issues so it can develop services that address real business requirements. That requires a closer partnership between IT and business staffs, making the business analyst role in IT a key one. SOA forces the business and IT to take a common design and development approach, so it's no surprise that Aberdeen Group's survey showed that half of large companies cite "alignment with the business" as the top factor that drove them to initiate or implement SOA. This factor was closely followed by "managing IT complexity," cited by 49% of large companies.

This tight coupling between IT and business puts the CIO at the nexus between the two groups, in a position that requires deep business understanding and an ability to lead IT efforts that deliver on the business needs. Because services reflect actual business processes, business managers will be able to measure a CIO's effectiveness on aligning IT to business values, something that's difficult to do with traditional IT projects. "It's a great way to unify the organization," says Scott Metzger, CIO at San Luis Obispo, Calif.-based TrueCredit, a subsidiary of credit reporting agency Trans Union LLC.

But that value may not be apparent right away. SOA requires a retooled IT infrastructure, and the first applications delivered will largely execute existing business processes. But the benefits should soon become apparent, as IT adapts the services more quickly to changing business needs and builds entirely new services.

"The marginal cost for putting on the next Web service is zero," says Guido Sacchi, CIO and executive director of shared services at Atlanta-based CompuCredit Corp.

Not Just a Project

Because SOA is an architecture, not a specific technology or product, CIOs should not promise to deploy "an SOA." Instead, they should promise to deliver business-critical services using the SOA model. A complete SOA effort can take five or more years to deploy. Fortunately, SOA's approach of breaking applications into discrete services means an SOA effort can be incremental, gradually replacing traditional applications.

"It's a long-term journey" to a truly different way of delivering business processes, says Judith Hurwitz, president of Hurwitz & Associates, an IT consultancy in Waltham, Mass.

The SOA approach and its supporting technologies allow greater interplay among existing and new applications but also require a new kind of application development. Services require extra work to create the interface that links the service with others and describes what the service does in business and technical terms and how other systems access it. "A good service knows who it is, can describe itself to others and show who wants to connect to it," says Jeff Gleason, director of IT strategies for the financial markets group at Transamerica Life Insurance and Annuity. "The essence of service-style integration is that the interface is intelligent and communicative."

Creating and deploying services within an SOA also requires a different type of talent. The IT team must include services and data architects, developers who understand object orientation, business analysts, developers familiar with the inner workings of existing systems, experts in distributed systems development and management, and staffers familiar with Web-oriented tools and standards. "It's not easy to find people able to build these types of architectures," warns Sacchi.

And then the CIO needs to ensure that everyone follows the architecture. "SOA isn't a technology; it's a framework, a blueprint, and if you don't have control over it and aren't guaranteeing that it's being applied across the organization, you'll never have a true SOA. There are probably a million ways to architect an integration layer, but you can't have a thousand different ways inside your company," says Rick Sweeney,

Will Vendors Really Do SOA?

Seeing the interest in SOA among their enterprise customers, many vendors are starting to rethink their own applications as a set of services, making them more modular and thus more easily updated incrementally. While some vendors' SOA offerings may involve nothing more than repackaging their existing approaches and relabeling individual suite applications as services, many others see SOA as a way to gain the same benefits for their internal development efforts that their CIO customers are beginning to see

If software vendors adopt the SOA approach for their own products, they'll be able to more easily modify and add components – and thus deliver incremental services without requiring customers to undertake major upgrades.

The component approach favored in SOA should also help CIOs lower their software acquisition costs. That's because they'll only have to buy the specific services they need, not everything the vendor decides to bundle. It should also reduce vendors' development costs, which should also help reduce prices.

But the SOA approach also adds risk for software vendors: CIOs can invest in internal services or buy third-party services if they find a vendor's product to be deficient or overpriced. That makes it harder for vendors to sell suites with mediocre components. It also gives them an incentive to develop their SOA-based applications in a way that isn't so open and transparent.

Major enterprise application vendors like SAP AG, Oracle Corp. and Microsoft Corp. are developing SOA platforms and reworking their applications for an SOA framework. Each vendor's goal is to make its platform the preferred basis for deploying services, using its own applications as well as third-party services.

"They're all wining and dining the software vendors to foster an ecosystem," says Dennis Gaughan, an analyst at AMR Research Inc. in Boston. All platforms are in early stages of development, but a common approach is to support the vendor's own interface standards to give an advantage to applications written specifically for that system. Software makers may also support industry-standard interfaces so companies can integrate vendor-neutral services from other providers or ones they create themselves.

You should watch vendors carefully to ensure that platforms advertised as SOA-based don't end up as proprietary systems in disguise, says Ronald Schmelzer, an analyst at ZapThink. Gaughan agrees, noting that "vendor self-interest can trump compatibility."

– GALEN GRUMAN

chief architect at Blue Cross and Blue Shield of Massachusetts.

When Shadman Zafar, senior vice president for architecture and e-services at Verizon Communications Inc., began developing a services catalog in 2001, many developers promised to follow the SOA and reuse components — but they didn't. "We had to stop some projects," he recalls. "People learned that they had to reuse the enterprise assets."

Technology Is Young

As promising as SOA is as a concept, the enabling technologies remain immature. So some initial SOA efforts won't scale to handle the number of services that a fully deployed SOA would have in a large enterprise. Because an SOA breaks applications into components that can be mixed and matched in multiple ways, managing those interactions and keeping track of the services and their business and data logic can be difficult.

One challenge caused by this complexity is that of master data management. In an SOA, data can be used by different services, which may or may not understand the data's meaning and context in the same way.

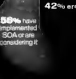
"The more you distribute the data, the more likely it is that there will be problems," says Song Park, director of pricing and availability technology at Starwood Hotels & Resorts Worldwide Inc. The result could be what Don DePalma, president of Common Sense Advisory Inc. in Lowell, Mass., calls "frankendata," which calls into question the accuracy of the results generated by the services and applications. Once you get over the thrill of the first services, you will discover the pain of data management "when you put together your first three- or four-way data service," says DePalma.

"There's always a context to data. Even when a field is blank, different applications impose different assumptions about what that means," says Ronald Schmelzer, an analyst at ZapThink LLC, a Waltham, Mass.-based research firm. The solution is to treat data logic as you would business logic in an SOA: as separate services that don't hide context or assumptions from the business services.

"Think about the processes that affect the master data wherever it lives," advises Henry Morris, an analyst at research firm IDC. For example, the business logic that looks up a customer's order status should rely on a separate data service to match the customer ID across the databases and applications that provide individual results — such as order date, order amount, product description and shipping status — to that business logic.

MEASURED MOVES

More then half of respondents are making the move to SOA:



BASE:

MASTER PLAN

Once implemented, their SOAs will be used for:

BASE

As IT creates more services, it becomes harder to keep track of which services are available and what each one does. That can lead to the repeated creation of the same services, eliminating the reuse advantage of SOA, as well as threatening the benefit of having common services for common tasks. At the least, you need an architectural review group that looks at proposed services to see if they might already exist or can be adapted from what already exists. At best, the CIO should create a services repository or registry that developers (and business requesters) can access, though the current technology for this is not yet well developed. "We knew at 15 components that we'd need a registry," says Edmund Vazquez, Web services program manager at Sprint Business Services, a unit of Sprint Nextel Corp. Sprint's registry lets business and IT staffers see if a needed service already exists, or if there's a similar one that can be used to develop a new service.

Incremental Approach

The transition to an SOA should be just that, a transition, not a big bang. In the early phases of implementing an SOA, it makes the most sense to choose projects that provide the greatest financial impact and thus generate support for further IT investment to enable the use of more services.

Once you've picked the initial target, it's usually best to focus on related services for the next stage, so the developers can understand their interactions and divide the constituent services appropriately. The next step is to move into different business domains in the same incremental fashion.

"One of the nice things about SOA adoption is that adoption, implementation and deployments can be incremental as long as you keep your eye on the bigger picture," says Vazquez.

But achieving the promise of SOA requires a firm commitment from the CIO — with support from the rest of the business — to think differently. Otherwise, SOA investments will simply be this decade's IT fad, creating many projects with no lasting impact. If an SOA's focus becomes specific technologies — rather than the architecture — IT has missed the point, says Praveen Sharabu, director of enterprise architecture at Con-Way Transportation Services Inc., a trucking company based in Ann Arbor, Mich. "Companies tend to look for a Holy Grail," he says. "But this is really about building a solid foundation." ◆

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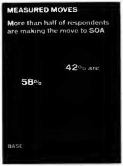

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The SOA Toolbox

Focus on the functions you need, not what to buy.

RED NOSE STUDIO

BY ROBERT L. SCHEIER

Mike Kronenwetter has big dreams for his service-oriented architecture: He wants it to align his IT efforts more closely with the needs of the business.

But Kronenwetter, vice president of technology management at health insurer Highmark Inc. in Pittsburgh, is building the foundation for that dream step by step. Wherever possible, he wants to build his SOA on newer versions of products he already uses, and he's "working on a lot of our strategies around what it means — what are the governance models we need and what are the pilot projects we should be looking at?"

Analysts say Kronenwetter's approach is the right one. SOA success is determined not by which specific products you buy, but by how well you understand what you need from your SOA and which products pitched as "SOA solutions" meet your needs. This is even more important with SOA than it is when you're evaluating other new technologies, because SOA is fundamentally not about new technologies, but about new ways to create, manage, share and secure applications. With the right SOA perspective, the systems that companies already use can get them a long way toward their SOA.

An SOA is a radical leap from the conventional model of stand-alone applications consisting of bundles of functions, such as "create customer record" or "create invoice." In an SOA, each of those functions is represented by a "service" available on the network to any application or user who has the authority to use them.

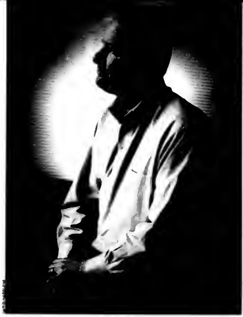
If all goes well, it becomes easier, cheaper and faster to meet new business needs by creating collections of already-available services than it is to keep building new stand-alone applications and to laboriously write interfaces between those applications whenever they need to share data. Early adopters are doing just that, with a mix of new technologies and products already in-house.

Build on What You Have

At Highmark, Kronenwetter didn't set out to buy an enterprise service bus (ESB) that could help him build his SOA, but he is already using IBM's MQ Series messaging software. The latest release of that software, as well as IBM's WebSphere Application Server, could provide the ESB functions Kronenwetter needs as he expands the range of services he deploys.

Many other SOA builders "want to use their existing infrastructure" in the form of existing middleware, as well as application servers running Web applications, says Ronald Schmelzer, an analyst at ZapThink LLC, an IT consultancy in Waltham, Mass.

Kronenwetter chose IBM's WebSphere Business Modeler for upfront service design because it was relatively easy to use, both for business analysts who outline the processes they need to automate and for the systems analysts who use those models to develop actual code. He chose LogicLibrary Inc.'s Logidex metadata repository because of how well it integrated into the WebSphere development environment and how easy it



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BIG DRAWS

factors that influence companies adopting an SOA architecture

BASE

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BIG DRAWS

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BASE

SOA HURDLES

challenges to SOA adoption:

BASE

is to search for and use components needed to create services.

Monitoring and management is the last big piece of Kronenwetter's SOA puzzle. For that, he says, "We're an [IBM] Tivoli monitoring shop, and we're looking at how to leverage the monitoring infrastructure we have in place."

David Llamas

David Llamas, IT director at Harrods Ltd. in London, chose Sun Microsystems Inc.'s Java Integration Suite as the foundation for his SOA. His goals were to make it easier for business users to get a single view of each customer's actions over the company's sales channels and to eliminate reliance on internal developers to create and modify interfaces among applications that needed to share data.

Llamas chose the Sun suite because its master data management capabilities make it easier to create and maintain single customer views across multiple systems. It also makes it easy to modify the Java code underlying his services as business conditions change.

Unicco Service Co., a facilities management company in Auburndale, Mass., has written about 20 services using the Bowstreet Portlet Factory from Tewksbury, Mass.-based Bowstreet Inc., which was acquired by IBM in December 2005. Unicco has

The SOA Bleeding Edge

Something as radically different as an SOA requires radically new products. Two companies are taking that gamble with unusual approaches to creating and running services.

Webalo Inc. in Santa Monica, Calif., aims to make it easier for end users to control the look and feel of data presented to them in an SOA by representing the service consumer (which could be a person or a device, such as a BlackBerry) as just another service within the SOA

Most SOA tools, says Webalo co-founder and Chief Technology Officer Seth Bruder, focus on "abstracting" service providers (such as applications or databases) and making their information available as a service over the network. But on the receiving end, developers have to create complex software to present that information in a form usable for the receiving device, such as a handheld.

The Webalo User Proxy "allows a business consumer and user to drive content and presentation and interface with those back-end systems" in a more natural way, says Bruder. The proxy will first see the light of day through a partnership with IBM, which last month was scheduled to roll it out in an IBM-branded service called the Mobile Dashboard for transmitting critical business information to mobile users.

While it's too soon to say how successful Webalo will be, the company is right to focus on the "consumer" side of the services equation, says Jason Bloomberg, an analyst at ZapThink. Such a user proxy will eliminate the work of writing separate translation software for each device. As more companies figure out how to produce services, he predicts, "more and more of the focus is going to be on the consumer side, whether it's multiple form factors or other sort of rich-client capabilities or consumer-centric [issues]."

Bilal Khokhar, development manager for field applications at Unicco, says he would definitely be interested in such a proxy to help him develop his own services-enabled dashboard, which would draw data from multiple corporate databases to give top managers an instant overview of business performance.

If Webalo is "abstracting" users, then **Azul Systems Inc.** in Mountain View, Calif., is abstracting processing power with network-attached processing appliances that make compute power instantly available to any service that needs it, says Vice President and Chief Marketing Officer Shahin Khan.

Azul's CentriCore appliance has another advantage for SOA, says Khan: It's designed to run the virtual machines that are the executable components of services. The appliance uses a combination of software techniques and hardware-assisted features to perform garbage collection (freeing up memory no longer needed by applications) without pausing the applications. This allows the virtual machines to get the full performance boost of the hundreds of processor cores in a CentriCore appliance. It also includes specialized hardware for managing multiple application threads so they, too, can exploit the appliance's multiple cores, he says.

Khan declines to say how many of the appliances the company has sold since they went on sale last June. They cost approximately $1,000 per core, making a typical 96-way system "on the order of $90,000, with a healthy amount of memory," he says.

This very dense, on-demand processing could be attractive for companies that want to create capacity for the unpredictable demands of an SOA without having to keep conventional servers on standby, says Vernon Turner, an analyst at research firm IDC. "The Azul box is based on a very dense, multicore [architectural] built into a very small form factor," he says. While mainstream blade servers can run two- to four-processor cores in a single processor socket, Azul runs 16 per socket, says Turner.

– **ROBERT L. SCHEIER**

no real SOA yet, says Bilal Khokhar, development manager for field applications. But as he prepares to combine services in an "executive dashboard" of critical business information, he says he'll look for ESB-like functions, such as fault tolerance and guaranteed message delivery.

STILL EVOLVING

Respondents rated the maturity and capability of the following SOA technologies:

BASE

Building Blocks

Different combinations of the functions you need are provided by a sometimes baffling array of products.

A **registry/repository** takes care of tracking and managing services and their components. This functionality is needed to ensure that only approved services can run and that services can be updated as needed. In some cases, it helps control which users or applications can access certain services.

A registry is usually responsible for the service components needed at runtime, whereas a repository is more of a historic library of components originally used to create the services.

Some products handle both types of data and provide sophisticated search capabilities for everything from models used in development to operational reports about the SOA. Some also store security-related information, such as user access rules.

Features to look for, say analysts, include support for standards such as the Universal Description, Discovery and Integration standard, ease of use and application programming interfaces to support key functions such as the ability to subscribe to changes or access the registry.

The **modeling** function allows business users and systems analysts to define the business processes the service will enable. Based on the process diagram, the modeling tool exports code that can be imported into other design tools or into application servers.

Key features include ease of use, support for key SOA standards and whether the code produced by the modeler fits your development environment. Some customers even use diagramming tools for modeling.

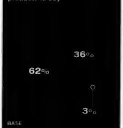
The **management and security** function can involve monitoring and managing the SOA messaging infrastructure, the services themselves and even business information, such as whether key transactions have been completed. These functions might be carried out by stand-alone applications, other SOA tools, such as ESBs or messaging middleware, and even dedicated security appliances, such as XML gateways.

Usually described as a common platform over which services communicate at runtime as they share messages or data, an **ESB** can mediate or translate among the various data and messaging protocols used by the underlying applications represented by the services.

Some products are more specialized. Sonic Software Corp., part of Progress Software Corp. in Bedford, Mass., sells an XML server to speed XML processing. It also offers the Sonic Collaboration Server, which extends the capabilities of Sonic's ESB so it can integrate with the systems of external business partners.

STANDARDS ARE KEY

The importance of support for key SOA protocols and standards when choosing which products to buy



CentraSite, a repository developed by Fujitsu Ltd. and Software AG, stores and manages data from SOA integration products such as Fujitsu's Interstage Business Process Manager and Software AG's Enterprise Service Integrator and Enterprise Information Integrator.

There's also a "sizable market" for software that allows data and business rules on mainframes to be presented as services, says Schmelzer.

Microsoft Corp. plans to provide an SOA messaging platform with the Windows Communication Foundation, which is scheduled for release this year as part of Windows Vista.

With such a fast-changing and hard-to-define tool set, some analysts argue that it's best to begin building services with the tools you need now and look for other SOA functions as you need them.

"If I architect around 'my platform is such and such,' I've got no sustainability, no flexibility," says Randy Heffner, an analyst at Forrester Research Inc. "If I get a different product with a different scope of capabilities, I've got to redraw my architecture, and I don't want to do that." ◆

Scheier is a freelance writer in Boylston, Mass. You can contact him at rscheier@charter.net.

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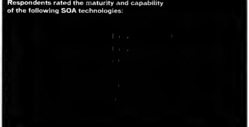
The **management and security** function can involve monitoring and managing the SOA messaging infrastructure, the services themselves and even business information, such as whether key transactions have been completed. These functions might be carried out by stand-alone applications, other SOA tools, such as ESBs or messaging middleware, and even dedicated security appliances, such as XML gateways.

STILL EVOLVING

Respondents rated the maturity and capability of the following SOA technologies:



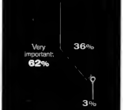
BASE

Usually described as a common platform over which services communicate at runtime as they share messages or data, an **ESB** can mediate or translate among the various data and messaging protocols used by the underlying applications represented by the services.

Some products are more specialized. Sonic Software Corp., part of Progress Software Corp. in Bedford, Mass., sells an XML server to speed XML processing. It also offers the Sonic Collaboration Server, which extends the capabilities of Sonic's ESB so it can integrate with the systems of external business partners.

STANDARDS ARE KEY

The importance of support for key SOA protocols and standards when choosing which products to buy:



BASE

CentraSite, a repository developed by Fujitsu Ltd. and Software AG, stores and manages data from SOA integration products such as Fujitsu's Interstage Business Process Manager and Software AG's Enterprise Service Integrator and Enterprise Information Integrator.

There's also a "sizable market" for software that allows data and business rules on mainframes to be presented as services, says Schmelzer.

Microsoft Corp. plans to provide an SOA messaging platform with the Windows Communication Foundation, which is scheduled for release this year as part of Windows Vista.

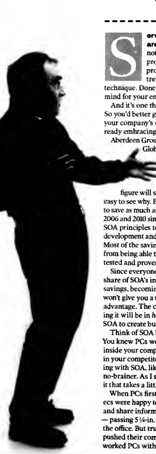
With such a fast-changing and hard-to-define tool set, some analysts argue that it's best to begin building services with the tools you need now and look for other SOA functions as you need them.

"If I architect around 'my platform is such and such,' I've got no sustainability, no flexibility," says Randy Heffner, an analyst at Forrester Research Inc. "If I get a different product with a different scope of capabilities, I've got to redraw my architecture, and I don't want to do that." ◆

Scheier is a freelance writer in Boylston, Mass. You can contact him at rscheier@charter.net.

OPINION

An **SOA** State Of Mind


ROBBIE McCLARAN

BY MARK HALL

Service-oriented architecture is not the next "rapid prototyping," "extreme programming" or other trendy IT development technique. Done right, it's a state of mind for your entire business.

And it's one that's catching on fast. So you'd better get cracking, because your company's competitors are already embracing the SOA mind-set.

Aberdeen Group surveyed 284 Global 2,000 companies and learned that 68% were engaged in SOA projects in 2005. By 2007, that figure will skyrocket to 98%. It's easy to see why. Big companies expect to save as much as $53 billion between 2006 and 2010 simply by applying SOA principles to application development and deployment. Most of the savings will come from being able to reuse fully tested and proven code.

Since everyone will get their share of SOA's inherent operational savings, becoming an SOA shop won't give you a unique competitive advantage. The critical part of adopting it will be in *how* you implement SOA to create business opportunities.

Think of SOA like PCs in the 1980s. You knew PCs would be ubiquitous inside your company as well as within your competitors' businesses. Going with SOA, like adopting PCs, is a no-brainer. As I said, it's how you do it that takes a little gray matter.

When PCs first arrived, most IT execs were happy to let users buy them and share information via sneakernet — passing 5 ¼-in. floppy disks around the office. But true IT leaders quickly pushed their companies toward networked PCs with mobile capabilities running distributed applications that added business value throughout their organization.

The same will be true for SOA. It won't be enough that you litter your code with SOAP envelopes and memorize your industry's XML vocabulary. You'll need to build an SOA infrastructure that makes it possible for end users to exploit the technology.

How will you do that?

For starters, don't think of the software components as part of the IT department's arsenal. Make them part of your company's business weaponry. Push component access, detailed descriptions and usage examples out to end users. Give them easy-to-use tools that show them how to combine, compile and, yes, deploy their own homegrown applications just as users built and shared their own Excel macros.

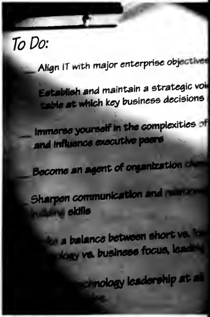
But there's a big difference. When end users created value with Excel, for example, IT surrendered part of its leadership to Microsoft. In that case, end users knew it was Bill Gates & Co. that gave them the capability to do new things for the business, not you. With SOA, however, you can foster an environment to liberate end users from getting into an IT application-development queue. One approach is to create an SOA SWAT team and make it available to assist end users struggling with component programming and to test end users' final code.

Sure, SOA is an opportunity to save big IT operation dollars. But more important, it's a chance to let end users create major business value while enhancing IT's reputation. ◆

Hall is editor at large and a columnist at Computerworld. *You can contact him at mark_hall@computerworld.com.*

How do you maximize the value of IT to the Business?

IT is still one of the most misunderstood functions in business. The CIO Executive Council — a professional community developed by CIOs — has focused its members' collective effort on this challenge. Their initiative has resulted in groundbreaking tools — the IT Value Matrix and Knowledge Center™ — to help leverage the value of IT throughout the organization.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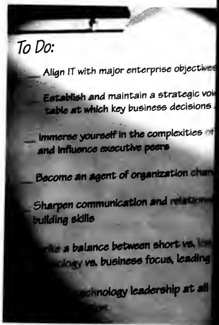

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__ Align IT with major enterprise objectives

__ Establish and maintain a strategic voi
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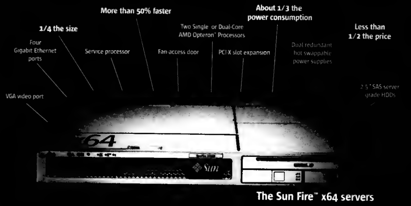
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State Workers Warned of Florida Data Leak

Sensitive employee data may have been compromised by offshore contractors

BY ROBERT McMILLAN

Personal information of state employees in Florida may have been compromised after work on the state's People First payroll and human resources system was improperly subcontracted to one or more firms in India.

About 108,000 current and former employees who worked for the state between Jan. 1, 2003, and June 30, 2004, may be affected by the breach, according to an e-mail warning that was sent last week to everyone who was employed by the state during that period. All state workers were warned of the breach in a March 16 e-mail.

Officials said the data was sent to one or more offshore firms, which have yet to be disclosed, without the knowledge of the state or its primary outsourcing provider.

Florida's Department of Management Services (DMS), which oversees the People First system, said the number of potential victims could change as the investigation continues.

The DMS inquiry began earlier this year after officials learned that a subcontractor of outsourcing service provider Convergys Corp. may have improperly allowed companies in India to index state personnel files, said a DMS spokeswoman. Convergys is responsible for the data under a nine-year, $350 million contract to manage the state's personnel work, she said.

Convergys had subcontracted the indexing work to Denver-based GDXdata Inc., which subsequently turned to subcontractors in India, in violation of GDXdata's contract with Convergys, the DMS said. Convergys has since canceled its contract with GDXdata, the agency said.

"Convergys was misled by GDX, one of several subcontractors hired to perform work for the state of Florida," the Cincinnati-based provider of billing, customer service and human resources outsourcing services said in a statement.

A spokeswoman for GDXdata declined to comment.

'Inappropriate' Offshoring

The offshore work was made public in late December, when documents were unsealed in a "whistle-blower" lawsuit brought against GDXdata by two former employees.

The DMS spokeswoman said its investigation has so far uncovered "no known cases of credit fraud or identity fraud that resulted from this work."

"It is common today for businesses and even government to use offshore companies," the DMS said in the March 16 e-mail. "However, the use of offshore services in this case was inappropriate and unacceptable."

Convergys and the DMS will provide affected employees with credit protection plans, the spokeswoman said.

That's not enough for one of the state's public-employee unions, which is calling for an end to the Convergys deal. "We want this thing killed," said Doug Martin, communications director for the American Federation of State, County and Municipal Employees, Council 79. "This is a joke, and the sad thing is, we're paying for it."

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"We don't know how far the dissemination of this information has gone," he said. ▸

McMillan is a reporter for the IDG News Service.

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"Although [the] IRS has made progress [over the past year], controls over its key financial and tax processing systems located at two sites were ineffective," the GAO said in the report, which was released late last month.

The report concluded that the tax agency corrected 41 of 81 specific technical weaknesses that the GAO identified last year. But the GAO also found that the security system [illegible] further updates to correct "new information security control weaknesses that threaten the confidentiality, integrity and availability of IRS's financial information systems and the information they process."

According to the GAO, the IRS has not yet implemented effective electronic access controls related to network management, user accounts and passwords, user rights and file permissions, and logging and monitoring of security-related events. Also, the report said, the IRS doesn't always follow its own policy on password expiration and complexity.

For example, the IRS has not implemented the use of complex passwords on its Windows servers, and it does not adequately control the storage of passwords on its systems, the GAO said. The agency has also failed to restrict users' access to just the information they need to do their jobs, said the report.

"Collectively, these weaknesses increase the risk that sensitive financial and taxpayer data will be inadequately protected against disclosure, modification or loss, possibly without detection, and place IRS operations at risk of disruption," the report said.

The GAO recommends that the IRS enhance policies and procedures related to password and configuration settings to comply with federal guidelines; ensure that contractors with significant information security responsibilities are given specialized training; ensure that disaster recovery plans are complete; and enhance continuity capabilities.

In a letter to Gregory Wilshusen, the GAO's IT director, IRS Commissioner Mark Everson agreed to implement the recommendations in the report.

– LINDA ROSENCRANCE

Cognos Updates BI Suite

BY HEATHER HAVENSTEIN

Cognos Inc. last week brought out an updated version of the Cognos 8 business intelligence (BI) tool set, adding a new search capability and access to enterprise applications.

Cognos 8.1.2 is the first major release of the Ottawa-based firm's BI suite since its launch last September.

Chris Framel, applications group manager for Albuquerque, N.M., said the city began testing the new version of the Cognos software last week. He said he expects that the search capability in Cognos 8.1.2 will make it easier for users outside the city's firewall to access data from publicly available reports, such as lists of political campaign contributions and crime statistics.

"Citizens will be able to type something in a [Google-like] search and get information on anything they want to by querying the Cognos reports," Framel said. External users must now navigate through a series of prompts to find information, he said.

Framel hopes to have the new software available for external users by June 30.

For internal users in the city's 26 agencies, the software should ease the process of accessing data. Those users now have to navigate through various pieces of an aggregate cube of data from all the agencies to access cost and budgeting information for individual departments, Framel said.

"[The search tool] can alleviate upward of five minutes for good users or 30 minutes for a user who doesn't know a cube that well," he said.

The new search tool, called the Cognos Go Search Service, offers a browser-based search bar designed to help users quickly find BI information housed in reports, scorecards, dashboards and analysis, said Paul Hulford, senior product marketing manager at Cognos.

The new Cognos 8 version also includes report packs for SAP AG's mySAP R/3 software and Oracle Corp.'s Siebel CRM application. Those add-ons will allow users to combine historical information stored in a data warehouse with current data from the applications into a single report. The packs include predefined content for more than 60 commonly used reports for mySAP and Siebel CRM data.

For users of SAP's NetWeaver integration tool, Cognos 8.1.2 provides access to data in SAP's data warehouse, runs on the SAP Web application server and can present information through the SAP NetWeaver portal, according to Cognos.

The software also allows users to view, interact with and refresh Cognos 8 BI reports, analysis and metrics within Microsoft Excel and PowerPoint, the company said. ▸

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The new search tool, called the Cognos Go Search Service, offers a browser-based search bar designed to help users quickly find BI information housed in reports, scorecards, dashboards and analysis, said Paul Hulford, senior product marketing manager at Cognos.

The new Cognos 8 version also includes report packs for SAP AG's mySAP R/3 software and Oracle Corp.'s Siebel CRM application. Those add-ons will allow users to combine historical information stored in a data warehouse with current data from the applications into a single report. The packs include predefined content for more than 60 commonly used reports for mySAP and Siebel CRM data.

For users of SAP's NetWeaver integration tool, Cognos 8.1.2 provides access to data in SAP's data warehouse, runs on the SAP Web application server and can present information through the SAP NetWeaver portal, according to Cognos.

The software also allows users to view, interact with and refresh Cognos 8 BI reports, analysis and metrics within Microsoft Excel and PowerPoint, the company said. ■

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Tivoli Express

_INFRASTRUCTURE LOG

_DAY 49: Things are out of control. Our system's just not secure, flexible or reliable enough. Gil bought some "infrastructure bloodhounds" online. He says they can sniff out any problem.

_DAY 50: Bloodhounds aren't as good at sniffing out network problems as they are at chewing Ethernet cables.

_DAY 52: I've got it: IBM Tivoli Express middleware. It's a series of I.T. management solutions designed and priced for mid-sized businesses like us. It's secure, boosts uptime, and protects our data with automated backups. Our IBM Business Partner even customized and implemented it for us.

_Remind Gil: dog hair and computers, very bad combo.

Get the Guide to simple, fast, secure I.T. Management at:
IBM.COM/**TAKEBACKCONTROL**/SIMPLE

GLOBAL

An International IT News Digest

Microsoft Appeals Ruling in South Korea

SEOUL

MICROSOFT CORP. last week appealed a ruling by South Korea's antitrust regulators that would force the company to offer versions of Windows without its Media Player and MSN Messenger software.

The appeal, filed in the Seoul High Court, contends that the bundling of Media Player and MSN Messenger with Windows doesn't violate South Korean law. In a statement about the appeal, Microsoft called the bundling restrictions imposed by South Korea "more extreme" than the ones set by the European Commission in a similar ruling in March 2004.

South Korea's Fair Trade Commission issued its ruling in December after a 21-month investigation of Microsoft's business practices. The commission also fined the company 33 billion won ($34 million U.S.) and ordered it to provide links to the Web sites of rival vendors within Windows.

A spokesman for the Fair Trade Commission didn't respond to requests for comment on Microsoft's appeal last week.

■ DAN NYSTEOT, IDG NEWS SERVICE

GLOBAL FACT

The percentage of European residents who currently have access to broadband technology

Livedoor CEO Promises New Start After Arrests

TOKYO

THE NEW CEO of Livedoor Co. is vowing to revive the beleaguered Internet company following the recent arrests of its founder and two other executives for alleged violations of Japanese securities laws.

"We will rebuild our company and keep it going for the future," Kozo Hiramatsu told an audience at the Foreign Correspondents' Club of Japan here last month. "But this time, we promise we'll grow our company with integrity, enhanced corporate governance and [regulatory] compliance."

Livedoor used an aggressive acquisition strategy to grow into a small empire, with businesses ranging from Internet portals and a Linux distribution arm to used-car sales. But it hit a wall in January with the arrests of then-CEO Takafumi Horie and the other executives. Hiramatsu, who had been a senior vice president at Livedoor, replaced Horie on Jan. 24.

■ MARTYN WILLIAMS, IDG NEWS SERVICE

BMC Buys Israeli Firm for $150M

PETACH-TIKVA, ISRAEL

BMC SOFTWARE INC. last week said it has agreed to buy Identify Software Ltd., an application problem-resolution software vendor based here, for $150 million in cash.

Houston-based BMC plans to make Identify Software the centerpiece of a new business unit that will also be responsible for a line of transaction management tools introduced by BMC in February. BMC expects to complete the acquisition of Identify Software by midyear, and a company spokesman said more details about the new unit will be disclosed at that time.

Bob Beauchamp, BMC's president and CEO, said the group will offer tools for monitoring transaction-based applications and for identifying bottlenecks and errors and pinpointing their causes. "The reason we are buying Identify is, we couldn't figure it out," Beauchamp said. "They figured it out before we did." ◆

■ PETER SAYER, IDG NEWS SERVICE

Compiled by Mike Bucken.

Briefly Noted

SAP AG last week said it plans to more than quadruple the staff at its research and development facility in Shanghai by 2008. The workforce at SAP Labs China, which develops software for small and midsize businesses in Asia, Europe and North America, is expected to increase from about 400 people to 1,800.

■ JOHN BLAU, IDG NEWS SERVICE

Toshiba Corp. has won an intellectual property lawsuit in Tokyo District Court against the Japanese unit of Hynix Semiconductor Inc. Toshiba was awarded ¥7.8 million ($66,000 U.S.) in damages plus an injunction barring Seoul-based Hynix from selling certain memory chips in Japan. Hynix said it will appeal the ruling that it infringed on three Toshiba patents.

■ MARTYN WILLIAMS, IDG NEWS SERVICE

Siemens AG last week unloaded its remaining 12.5% stake in Munich-based electronic components maker Epcos AG for a total of about €90 million ($108 million U.S.). A week earlier, Siemens sold its 18% stake in Infineon Technologies AG, another chip maker in Munich, as part of a strategy to exit high-tech businesses and focus on more stable industries.

■ JOHN BLAU, IDG NEWS SERVICE

Oracle Bringing Fusion Plan to Users, Exec Says

Wookey also outlines road map for shipping acquired applications

BY MARC L. SONGINI

As senior vice president of applications development at Oracle Corp., **John Wookey** *faces the considerable task of crafting the vendor's next-generation suite of business software, dubbed Fusion. In an interview with* Computerworld, *Wookey talked about the plan to integrate Oracle's myriad applications and some of the plan's expected milestones.*

Based on interviews, Oracle users are most concerned about Fusion. Can you give them some words of comfort? We have a pretty good set of design-pattern flows for the applications, and we've started to take the customer groups through them. It gives them a sense of how the user interface will work and how we're mapping the job functions. In going through the assessments, we've been dealing with advisory boards, and we saw gaps between various products. A lot came down to the approach; the same business problems were attacked differently [by the vendors acquired by Oracle]. We'd work with the J.D. Edwards users on a process, and we'd talk to the E-Business Suite users and see how they looked at it. If something was better managed on the Oracle side, we'd go back to talk to the J.D. Edwards users about it. The nice thing is, now there are a lot of specific plans, and you can see exactly what is going on, and we can get feedback on it.

Do you find that customers are starting to understand Fusion? Over the last few months, we've seen, working with the CIO advisory board and the customer committees, that customers have been getting comfortable and conversant with what the [Fusion] plan is, and they're translating what it means into their own deployments in PeopleSoft or the E-Business Suite.

When will Fusion be completed? The year 2008 is when the Fusion suite hits the streets. But there are a lot of things happening later this year. We're releasing libraries of Fusion reports. Using XML, customers can see how they can extract and manipulate information for reporting. We're building libraries for reports on top of PeopleSoft, J.D. Edwards and the E-Business Suite that customers can use today. This will be the basis of Fusion reporting.

What's going on with the Siebel products? Siebel had really good [analytics] technology, and we're embracing that in Oracle. On the CRM side, we're planning Siebel 8.0, with some enhancements and a service-oriented architecture. Siebel 8.0 is under way and targeted for later this year. In addition, we plan to work aggressively to integrate Siebel CRM capabilities into Oracle and PeopleSoft ERP systems. We have a project under way, and this year we'll deliver integration.

What are your plans for the non-Siebel CRM lines? There is a major set of enhancements for both Oracle 12 and PeopleSoft 9 [CRM] coming out.

What are your short- and long-term plans for the other application lines? Later this year, there will be a major release of the Oracle E-Business Suite, Version 12, and PeopleSoft Enterprise, Version 9. J.D. Edwards Version 8.12 will come out in the next few months. There will also be another release of J.D. Edwards, EnterpriseOne 9.0, approximately 18 months after that. We'll also come out with J.D. Edwards World No. A9.1, early next year. ◆

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_INFRASTRUCTURE LOG

_DAY 35: Whoa! Came in today and found a black hole. Information goes in but doesn't come out. This is bad.

_DAY 36: The black hole just sucked in three interns. HR is not pleased.

_DAY 38: I've taken back control with IBM Information Management middleware. It's built on open standards. Totally scalable. Seamlessly unites all our critical information, whatever its source. Now our info has real business value, and we can use it in innovative ways to help spur growth.

_We got everything back from the black hole. Except the interns.

Information Management

See innovative IBM Info Management solutions in action:
IBM.COM/**TAKEBACKCONTROL**/INFOMGMT

DON TENNANT

Filling a Void

THE PROBLEM that arises when there's a big clamor over things that don't matter is that it tends to obscure things that do. Take the brouhaha over the recently announced contract under which the U.S. State Department is buying $13 million worth of PCs from Lenovo as part of its IT modernization program.

Predictably, members of the U.S.-China Economic and Security Review Commission have gotten all bent out of shape over the global contract, surmising that since Lenovo is a Chinese company, the deal could be a plot to enable the Chinese government to spy on the State Department. Of course, anyone with any knowledge of government procurement processes is rolling his eyes. Even if such an elaborate scheme were logistically possible (which, among other things, would require Lenovo President and CEO William Amelio and the other non-Chinese executives running the company to be in a communal coma), the U.S. government's well-established, rigorous security certification process would have uncovered the dastardly deed.

With the spotlight on the fact that the 16,000 computers covered under the contract are being supplied by Lenovo, it was easy to miss the fact that the contract the State Department signed was with CDW Government Inc., a unit of CDW Corp., the big computer-products distributor. And that's the part of this whole thing that really matters. Here's why.

Companies with global operations have fairly limited options when it comes to procuring computer products on a global basis, and none of them are all that attractive. Sourcing locally tends to be problematic not only because the company winds up with a mishmash of technology, but because it's unable to strategically leverage its buying power.

Fred Danback, vice president of global technology at XL Global Services, mentioned to me recently that he's steering clear of that route. "Those local value-added resellers are less important to me than they were 10 years ago," Danback said. "Now I look to leverage the relationships with the HPs and the Microsofts and the IBMs to manage a global account team and have them deal with distribution around the world."

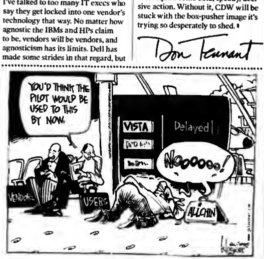
That's no doubt a smart move, but I've talked to too many IT execs who say they get locked into one vendor's technology that way. No matter how agnostic the IBMs and HPs claim to be, vendors will be vendors, and agnosticism has its limits. Dell has made some strides in that regard, but anything positive that Dell is doing is being more than offset by its customer service collapse. I've lost count of the horror stories I've heard from readers who are fed up with Dell, whether it's because of pathetic product support or random account-rep changes that thwart users' attempts to build a decent relationship with the company.

What we need, then, is a truly agnostic computer products supplier with a proven customer-service track record to fill the global void. Unfortunately, as far as I can tell, there are none.

But there's hope. The thing that really matters about that State Department contract is the bigger story of CDW's emergence as a key supplier to U.S. government operations around the world. And that, company officials say, is laying the groundwork for an expansion that will position CDW well to fill the void. I can buy that.

The only question is when. The need is immediate, and meeting it will require some bold, speedy, decisive action. Without it, CDW will be stuck with the box-pusher image it's trying so desperately to shed. ▪

Don Tennant



VIRGINIA ROBBINS

Making the Best of Bad Situations

I HAD GIVEN myself 75 minutes to drive the 45 miles from Napa to Oakland. I could barely see the taillights of the car in front of me as rain pummeled the windshield.

I was on my way to Mills College, where I was to be a guest lecturer speaking about best practices of IT governance. After clearing security and getting lost twice on the beautiful but sprawling campus filled with beige stucco buildings from the 1920s, I finally found the right classroom. I parked and ran up the hill through the misty end of the rain showers. Then, looking out at my audience of bright and eager MBA students, I told them how they, as future business leaders, should engage IT to make their businesses more competitive.

[illegible] is a former CIO and is now chief operations officer at North Bay Bancorp in Napa, Calif. Contact her at [illegible]

After I'd offered what I thought were very practical suggestions, a young woman who was in sales sat up, looking disgusted. She remarked, "This all sounds fine and good, but I don't see it working at my company." Two of her company's senior managers didn't get along, she explained, and they were unable to agree on a business strategy. And it's true that without a clear business strategy, IT has nothing to align with. A dysfunctional company can't do great IT.

That brings us to some different topics:

1. How can IT function in a dysfunctional company? Early in my career, I was one of two survivors of an IT department of more than 40 people when the new CEO decided to replace IT systems. In the beginning, I was proud to be a survivor; in the end, it was so painful that I decided not to stay until the conversion was finished. But what if you work in a dysfunctional company and want to keep your job?

Your first challenge is to accept what you can't change. Too many IT middle managers burn out trying to fix other managers' problems. You should certainly try to influence a bad situation, at least once. But if you've done that and see no hope of success, then it's time to develop a different plan.

At that point, I recommend finding the functional team. Even the most dysfunctional companies have teams that work. It could be Maria and her sales team or Floyd and the gang in finance or old Ed's group on the shop floor — somebody somewhere is doing something right. Find that team, and then solve its immediate IT needs.

In some cases, you will need to start small, working on things that may seem unimportant to you or beneath your skill set. Solve these, and you'll look like a hero. Use these small victories to build trust. Ask the functional team's management to help you acquire the resources you need to help them solve their bigger problems. Very soon, you'll be working on some very cool projects that add meaningful value to the company.

2. How does an application team cope when it's blamed for an implementation that failed because of what, in hindsight, were unclear requirements? When a company is dysfunctional, IT can end up being blamed for problems that aren't of its making. I have seen companies waste millions of dollars on new systems that didn't meet their needs.

Was IT at fault? No, the real issue was that the senior managers couldn't decide what they really needed. It's the old story of unclear requirements, but from the perspective of executive management, it's another case where the guys in IT failed the company.

The first thing to do in these situations is to fix what isn't working, championing whatever investments are required to make your systems operational.

Second, you need to have an open conversation with your business unit, preferably face to face. Does the business unit agree that you've fixed the problem? Can you find better ways to work together to ensure that this situation won't be repeated? How can you earn their trust? If you know you can't afford to do what the business unit asks, you must be very clear about that and ask what else can be done. Eventually, either you'll agree, or you'll agree to disagree.

Finally, deliver, deliver and deliver. If you have ended up agreeing to disagree, ask what you can do to help — after all, you all work for the same company. If a commercially available software system is better for your business owner, then do what you need to do to make the transition as smooth as possible.

3. How can business managers take full advantage of IT in a dysfunctional company? You still engage IT. Invite the IT manager to your group's meetings. Ask what your group can do to be a better customer of IT, and explain what your group needs from IT to do its job well.

Eventually, all dysfunctional companies stop being dysfunctional. Some simply stop being, dying painful deaths. Some get bought. Many get new CEOs. If you are part the functional team within a dysfunctional company, you'll have far greater opportunities when the dysfunctions get sorted out. ▸

WANT OUR OPINION?

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www.computerworld.com/columns

READERS' LETTERS

A Double Standard on Standards Question

DON TENNANT'S editorial "Standard Procedure" [March 20] traffics in a standard rant by those peddling OpenDocument format "goodness and light". Opposing views are automatically specious, infirm and unsanctified, and those pushing those views are, pejoratively put, lobbyists.

This reflects a narrow view of the First Amendment and its explicit freedoms – key among them for lobbyists being the right "to petition the government for a redress of grievances."

Here are our grievances. We've been advocating against Massachusetts' OpenDocument mandate for over two years, urging respect for all business models and their underlying intellectual property rights (IPR).

Massachusetts' policy is really an open-source preference policy, designed to boost the fortunes of so-called free offerings with little regard to merit-based choice, IPR or the real-world needs of the commonwealth and its citizens. Nothing more.

But there is something more. Its effect is broader. To paraphrase the policy's creator, the state's rights trump the IPR of individuals. This policy harbors no goodness and light for an industry that depends on IPR to thrive, even though it's been dressed up with Mother Teresa-like packaging by the near-perpetual phalanx of lobbying shops, consultants, associations and academicians, all aggressively politicizing the OpenDocument mandate for shareholder advantage.

Thankfully, though this publication seemingly condemns it, the First Amendment works as it should, agnostic to message. You get your shot in. OpenDocument pushers get theirs in. We get ours. On the whole, it makes policymakers more informed and others less beholden to entrenched interests.

Had Tennant taken the First Amendment's ethos to heart – more information is better than less – he might have tempered his editorial with more balance.

He may also have avoided a glaring conflict within the editorial itself – the very group that rejected the Chinese WAPI standard (because of "some sort of influence or pressure") is the same one that will ultimately "bless" for wider acceptance the OpenDocument standard. That standards group, as others, could not exist without the input – yes, lobbying – of a variety of interests.

This double standard disserves your readers and your own credibility.

Melanie Wyne

Executive director, Initiative for Software Choice, Arlington, Va.

Note: *The ISC is an international coalition of software companies and IT associations that advocates for neutral treatment of government software procurements. It is run by the Computing Technology Industry Association.*

Columnist Was Right About the CIO's Role

I READ MARK Hall's column "CIOs (Should) Rule" [Feb. 20], and I couldn't have said it better myself. I was the CIO at an NYSE-listed company for eight years, reporting most of that time to the CEO. I am now the CEO of a small private company. I believe there is no better place in an organization to prepare for the CEO role than the CIO position. As CIO, you are exposed to every facet of the business (including the accounting and finance functions). The CFO can hardly make the same claim. In addition, the CIO is in the best position to help create a competitive advantage for the company. A strong grasp of the balance sheet, income statement and cash flow shouldn't be all that's needed for the inside track to the CEO role. Furthermore, most CFOs have very little knowledge of how to implement IT successfully, let alone understand the inner workings of the operations of a company. But the CIO has exposure to both – and in most cases will have a firm grasp of the financial statements as well.

Brian Scott

Erie, Pa.

I HAVE BEEN a CIO for over 10 years in several companies. I have found that when I have reported to the CFO and allowed my business skills to show, I've ended up reporting to the CEO on a peer level with the CFO. I totally agree that CIOs need to shed their timid ways. I have half-jokingly said that the CFO reports on history but the CIO affects the future. I have also found that being exposed to the overseas operations gave me better insight than the CFO had into the processes and problems encountered in facilities in other parts of world.

Fernando Gonzalez

CIO, Byer California,
San Francisco, fgonzale@byer.com

A Maverick Writes

I CAN'T REMEMBER the last time I took the time to respond to something I had read, but Mary K. Pratt's article on the challenges of managing mavericks was such an eye-opener, I felt compelled to write ["Managing Mavericks," Feb. 13]. Thank you for conveying the positives behind what has often been a troubled existence for me.

A colleague of mine sent the article to me with a single sentence: "This is you." Given the title, I was initially offended until I read further and realized she was actually trying to promote positive self-awareness for the irreverent approach I take to my work. I found myself wishing more of the people I interact with regularly had her insight. Perhaps Pratt's article will help shed some light on the value troublemakers like me offer the workplace.

Samantha Moulton

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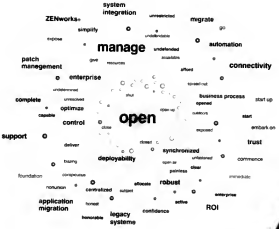
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embark on
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trust
deliver
closed
synchronized
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clear
painless
foundation
conspicuous
immediate
nonunion
allocate
robust
centralized
subject
enterprise
application migration
honest
active
ROI
honorable
legacy systems
confidence

DEFINE **YOUR** OPEN ENTERPRISE

In my Open Enterprise, automation manages IT resources so my IT staff doesn't have to.

Servers, platforms, applications, people and demands You have more of everything except the money and resources to manage all of it Resource Management software from Novell® runs on Windows,* NetWare® and Linux,* automating everything from policy and security enforcement and asset tracking to OS migration on desktop, laptop and handheld devices So you can decrease IT effort and inefficiency. In fact, IDC reports that Novell ZENworks® yields a 1,012% three-year ROI with a 98 5-day payback period Now that's a return you can count on

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TECHNOLOGY

04.03.06

FUTURE WATCH

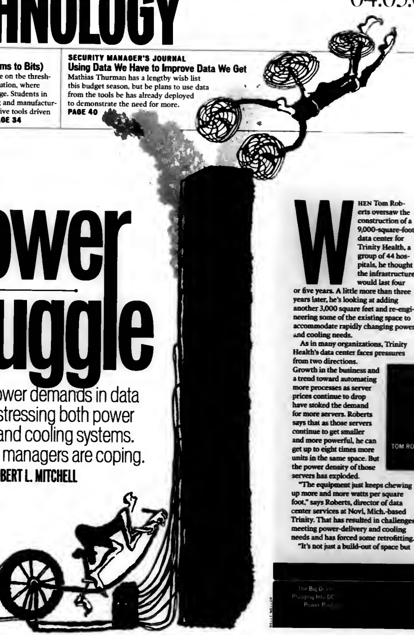
Bits to Atoms (and Atoms to Bits)

Neil Gershenfeld says we are on the threshold of the third digital revolution, where matter and information merge. Students in MIT's Fab Lab are designing and manufacturing products using inexpensive tools driven by open-source software. **PAGE 34**

SECURITY MANAGER'S JOURNAL

Using Data We Have to Improve Data We Get

Mathias Thurman has a lengthy wish list this budget season, but he plans to use data from the tools he has already deployed to demonstrate the need for more. **PAGE 40**



BELLE MELLOR

Power Struggle

Increasing power demands in data centers are stressing both power distribution and cooling systems. Here's how IT managers are coping.

BY ROBERT L. MITCHELL

WHEN Tom Roberts oversaw the construction of a 9,000-square-foot data center for Trinity Health, a group of 44 hospitals, he thought the infrastructure would last four or five years. A little more than three years later, he's looking at adding another 3,000 square feet and re-engineering some of the existing space to accommodate rapidly changing power and cooling needs.

As in many organizations, Trinity Health's data center faces pressures from two directions. Growth in the business and a trend toward automating more processes as server prices continue to drop have stoked the demand for more servers. Roberts says that as those servers continue to get smaller and more powerful, he can get up to eight times more units in the same space. But the power density of those servers has exploded.

TOM ROBERTS

"The equipment just keeps chewing up more and more watts per square foot," says Roberts, director of data center services at Novi, Mich.-based Trinity. That has resulted in challenges meeting power-delivery and cooling needs and has forced some retrofitting.

"It's not just a build-out of space but

The Big Dr
Plugging Into DC
Power P

8 TIPS For a More Efficient Data Center

Review the status of all applications and eliminate dead wood by shutting down old servers that aren't needed. This can cut power consumption in some organizations by as much as 30%.

Consolidate servers using virtualization and asset management. Shed servers that are running applications that are no longer used. Virtualization allows greater utilization of existing servers.

Specify high-efficiency power supplies for servers in requests for proposals. Ask for systems that deliver a higher performance per watt.

Rack systems with centralized DC power cut energy use and heat inside the cabinet by moving power conversion away from servers.

Tighten up racks by using blanking plates and sealing holes to prevent air leaks. Consider newer rack designs that optimize airflows.

Clear raised-floor passages of cabling or other obstructions to airflow.

Upgrade to more efficient 208-volt, three-phase power, if you haven't already. The higher voltage requires a lower current, which reduces losses. The small savings of 1% or 2% add up in a large data center.

In data centers with high-density heat loads, consider hiring a professional to measure airflows and correct air conditioning problems. Simply adding more air conditioning doesn't always help

of the electrical and the HVAC systems that need to cool these very dense pieces of equipment that we can now put in a single rack," Roberts says.

Power-related issues are already a top concern in the largest data centers, says Jerry Murphy, an analyst at Robert Frances Group Inc. in Westport, Conn. In a study his firm conducted in January, 41% of the 50 Fortune 500 IT executives it surveyed identified power and cooling as problems in their data centers, he says.

Murphy also recently visited CIOs at six of the nation's largest financial services companies. "Every single one of them said their No. 1 problem was power," he says. While only the largest data centers experienced significant problems in 2005, Murphy expects more data centers to feel the pain this year as administrators continue to replenish older equipment with newer units that have higher power densities.

In large, multimegawatt data centers, where annual power bills can easily exceed $1 million, more-efficient designs can significantly cut costs. In many data centers, electricity now represents as much as half of operating expenses, says Peter Gross, CEO of EYP Mission Critical Facilities Inc., a New York-based data center designer. Increased efficiency has another benefit: In new designs, more-efficient equipment reduces capital costs by allowing the data center to lower its investment in cooling capacity.

Pain Points

Trinity's data center isn't enormous, but Roberts is already feeling the pain. His data center houses an IBM z900 mainframe, 75 Unix and Linux systems, 850 x86-class rack-mounted servers, two blade-server farms with hundreds of processors, and a complement of storage-area networks and network switches. Simply getting enough power where it's needed has been a challenge. The original design included two 300-kilowatt uninterruptible power supplies.

"We thought that would be plenty," he says, but Trinity had to install two more units in January. "We're running out of duplicative power," he says, noting that newer equipment is dual-corded and that power density in some areas of the data center has surpassed 250 watts per square foot.

> "Every single one of [the CIOs at six of the nation's largest financial services companies] said their No. 1 problem was power."
>
> **JERRY MURPHY**

At Industrial Light & Magic's brand-new 13,500-square-foot data center in San Francisco, senior systems engineer Eric Bermender's problem has been getting enough power to ILM's 28 racks of blade servers. The state-of-the-art data center has two-foot raised floors, 21 air handlers with more than 600 tons of cooling power and the ability to support up to 200 watts per square foot.

Nonetheless, says Bermender, "it was pretty much outdated as soon as it was built." Each rack of blade servers consumes between 18kw and 19kw when running at full tilt. The room's design specification called for six racks per row, but ILM is currently able to fill only two cabinets in each because it literally ran out of outlets. The two power-distribution rails under the raised floor are designed to support four plugs per cabinet, but the newer blade-server racks require between five and seven. To fully load the racks, Bermender had to borrow capacity from adjacent cabinets.

The other limiting factor is cooling. At both ILM and Trinity, the equipment with the highest power density is the blade servers. Trinity uses 8-foot-tall racks. "They're like furnaces. They produce 120-degree heat at the very top," Roberts says. Such racks can easily top 20kw today, and densities could exceed 30kw in the next few years.

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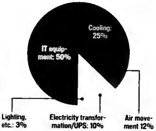
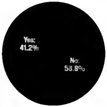
Where Data Center Power Goes



SOURCE: EYP MISSION CRITICAL FACILITIES INC., NEW YORK

Big Problem in the Biggest Corporations

Do you have a problem with power and cooling in your IT data center?



SOURCE: ROBERT FRANCES GROUP INC., WESTPORT, CONN.
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Ironically, many data centers have more cooling than they need but still can't cool their equipment, says Donabedian. He estimates that by improving the effectiveness of air-distribution systems, data centers can save as much as 35% on power costs.

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How many servers does it take to hit 3mw? Assuming today's average of 5kw per rack, you would need 600 cabinets with 15 servers per enclosure, or 9,000 servers total. A new data center designed for 100 watts per square foot would require 30,000 square feet of raised-floor space to accommodate the load.

– ROBERT L. MITCHELL

8 TIPS For a More Efficient Data Center

Review the status of all applications and eliminate dead wood by shutting down old servers that aren't needed. This can cut power consumption in some organizations by as much as 30%.

Consolidate servers using virtualization and asset management. Shed servers that are running applications that are no longer used. Virtualization allows greater utilization of existing servers.

Specify high-efficiency power supplies for servers in requests for proposals. Ask for systems that deliver a higher performance per watt.

Rack systems with centralized DC power cut energy use and heat inside the cabinet by moving power conversion away from servers.

Tighten up racks by using blanking plates and sealing holes to prevent air leaks. Consider newer rack designs that optimize airflows.

Clear raised-floor passages of cabling or other obstructions to airflow.

Upgrade to more efficient 208-volt, three-phase power if you haven't already. The higher voltage requires a lower current, which reduces losses. The small savings of 1% or 2% add up in a large data center.

In data centers with high-density heat loads, consider hiring a professional to measure airflows and correct air conditioning problems. Simply adding more air conditioning doesn't always help.

of the electrical and the HVAC systems that need to cool these very dense pieces of equipment that we can now put in a single rack," Roberts says.

Power-related issues are already a top concern in the largest data centers, says Jerry Murphy, an analyst at Robert Frances Group Inc. in Westport, Conn. In a study his firm conducted in January, 41% of the 50 Fortune 500 IT executives it surveyed identified power and cooling as problems in their data centers, he says.

Murphy also recently visited CIOs at six of the nation's largest financial services companies. "Every single one of them said their No. 1 problem was power," he says. While only the largest data centers experienced significant problems in 2005, Murphy expects more data centers to feel the pain this year as administrators continue to replenish older equipment with newer units that have higher power densities.

In large, multimegawatt data centers, where annual power bills can easily exceed $1 million, more-efficient designs can significantly cut costs. In many data centers, electricity now represents as much as half of operating expenses, says Peter Gross, CEO of EYP Mission Critical Facilities Inc., a New York-based data center designer. Increased efficiency has another benefit: In new designs, more-efficient equipment reduces capital costs by allowing the data center to lower its investment in cooling capacity.

Pain Points

Trinity's data center isn't enormous, but Roberts is already feeling the pain. His data center houses an IBM z900 mainframe, 75 Unix and Linux systems, 850 x86-class rack-mounted servers, two blade-server farms with hundreds of processors, and a complement of storage-area networks and network switches.

Simply getting enough power where it's needed has been a challenge. The original design included two 300-kilowatt uninterruptible power supplies.

"We thought that would be plenty," he says, but Trinity had to install two more units in January. "We're running out of duplicative power," he says, noting that newer equipment is dual-corded and that power density in some areas of the data center has surpassed 250 watts per square foot.

[illegible]

JERRY MURPHY,

At Industrial Light & Magic's brand-new 13,500-square-foot data center in San Francisco, senior systems engineer Eric Bermender's problem has been getting enough power to ILM's 28 racks of blade servers. The state-of-the-art data center has two-foot raised floors, 21 air handlers with more than 600 tons of cooling power and the ability to support up to 200 watts per square foot.

Nonetheless, says Bermender, "it was pretty much outdated as soon as it was built." Each rack of blade servers consumes between 18kw and 19kw when running at full tilt. The room's design specification called for six racks per row, but ILM is currently able to fill only two cabinets in each because it literally ran out of outlets. The two power-distribution rails under the raised floor are designed to support four plugs per cabinet, but the newer blade-server racks require between five and seven. To fully load the racks, Bermender had to borrow capacity from adjacent cabinets.

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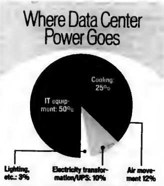

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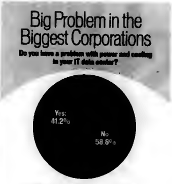

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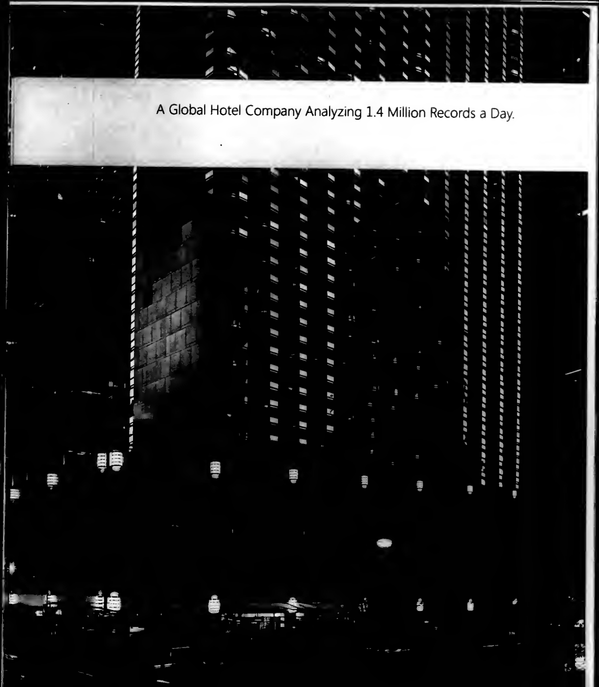
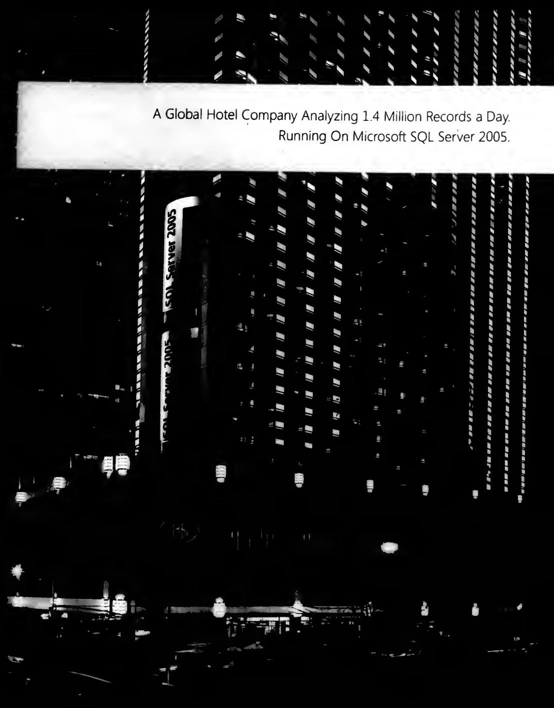


A Global Hotel Company Analyzing 1.4 Million Records a Day.


SQL Server 2005
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A Global Hotel Company Analyzing 1.4 Million Records a Day.
Running On Microsoft SQL Server 2005.

How does Hilton forecast demand for its 370,000 rooms and its catering services? They import data from six systems into one data warehouse requiring 7 million rows, and running on SQL Server™ 2005 with 99.98% uptime.* See how at **microsoft.com/bigdata**

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Bits to Atoms (and Atoms to Bits)

In MIT's Fab Lab, Neil Gershenfeld has already come up with $1 Internet nodes. Now he's looking toward fungible servers and personal fabrication. **By Gary Anthes**

Director of MIT's Center for Bits and Atoms

MIT's fabrication laboratory, also known as the Fab Lab

He has kicked off a revolution in digital fabrication

***Neil Gershenfeld** says we're on the threshold of the third digital revolution, one in which matter and information merge. He has kicked off the revolution in a fabrication laboratory, dubbed the Fab Lab, at MIT, where he's the director of the Center for Bits and Atoms (CBA). In the Fab Lab, students design and manufacture their own products using inexpensive fabrication and electronics tools driven by open-source software and programs written by MIT researchers. Other "fab labs" based on these principles are spreading around the world, especially in less-developed countries. Gershenfeld, who has laid out the precepts of personal fabrication in his book* Fab: The Coming Revolution on Your Desktop — From Personal Computers to Personal Fabrication *(The Perseus Books Group, 2005), recently explained the mission of the CBA to* Computerworld's *Gary Anthes.*

What do you mean when you say we are entering the third digital revolution? Historically, we have had two very distinct and important phases: communications and computing. What I'm referring to is fabrication, which is still on the analog side. The real state of the art in fabrication is in the body, in the ribosome. It's essentially a molecular computer; it runs a program. It doesn't control the tool — it is the tool. And the output isn't arranging bits — it's arranging atoms. But it has all the properties that Claude Shannon and John von Neumann [defined] for communications and computation.

One of the CBA's "grand challenges" is to create "it from bit." What does that mean? The research we are doing is looking at how you go, quite literally, from bits to atoms and from atoms to bits. If you have a description, how do you turn it into a thing, and if you have a thing, how do you turn it into a description? What are emerging are principles for how to do exactly that.

Is this a new branch of computer science? In many ways, computer science is one of the worst things to happen to either computing or science. The canon of computer science that's currently taught prematurely froze a model of computation based on 1950s technology. Nature is a much more powerful computer than traditional models of computation consider. One of the dramatic examples is quantum computing, but there are many other ways nature can compute that are poorly captured in conventional models of computation.

Can you give an example? One of the first projects we've done is Internet 0. It lets you build a Web server for $1 that can go into a light switch. It takes the original properties of the Internet — internetworking and the end-to-end principle — and extends them down to the physical device level. It will let you do IP to everything, at essentially the cost of an RFID tag. It's the first step in breaking computation out of the boxes you see today and integrating it with the physical world.

FUTURE WATCH

What's another example? We are developing fungible computation — computation as a raw material that can be poured, sprayed or unrolled, that can be applied where you want it in the quantities you need. For example, you have a display and you need a little more screen space, or you have a server and you run out of resources. Today, you can add another display or another server, but that's about the granularity that's possible. So the research is looking at how you can make millimeter- or submillimeter-size [computers] and put them in various form factors, such as paint or wallpaper, and then build programming models so the little devices organize locally and globally. So that display becomes wallpaper you unroll, and if you want more display, you add more wallpaper. If your server needs more resources, you open the top and pour in more server. We are pushing the frontiers of fabrication, process integration, packaging, communications and, most importantly, programming models.

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> NEIL GERSHENFELD

What are some of the things your students have made in MIT's Fab Lab? They have been consistently innovative in things I never would have thought of. One made a Web browser for parrots. One made a dress with sensors and spines to protect her personal space. One made an alarm clock you have to wrestle with to prove you're awake. You can buy at Wal-Mart anything you need; this is technology that you want. It's technology for a market of one person.

Is there any corporate interest in that kind of personalized fabrication? There is a quiet trend inching toward it. Instead of central, mass production, it's on-the-fly rapid prototyping, so things like clothes or shoes or a cell phone case get customized locally for a customer.

But most big companies look at the Fab Lab stuff and say, "It's nice those kids are playing with those cute toys, but we'll do the real stuff." They are repeating the mistakes of the transition from mainframes to PCs, where the mainframe people said PCs were toys. Conventional companies don't recognize the extent to which these aren't just toys but fundamentally threaten their business models.

Where will you go next? Molecular assemblies are 20 years out, and fab labs are one step toward them. Conventional labs use millions of dollars in equipment, but with just $20,000 to $30,000 in equipment, fab labs today let you work at the level of microns and microseconds. We are moving toward nanometers and nanoseconds. Ultimately, we will end up with *Star Trek*-style molecular assemblies that make anything from scratch. ▪

Got a mobile or wireless deployment so good it's worthy of an award?

Nominate it for Computerworld's "Best Practices in Mobile & Wireless" Awards Program!

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- **Managing Cellular Mobile Data**
- **Innovation and Promise**

Nominations are welcomed from IT Users/Implementers; Systems Integrators/Consultants; IT vendors on behalf of customers, or, their own In-House Deployment; and PR firms on behalf of clients. Multiple submissions of case studies describing different deployments per company/organization will be considered.

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WebSphere Portal

_INFRASTRUCTURE LOG

_DAY 16: It's out of control. It takes people forever to access...everything. We can't get anything done. We're so inefficient. There's got to be a better way.

_DAY 17: Gil says he's found one: aerodynamic bodysuits. He says everyone will be able to work faster and better now.

_DAY 21: I've taken back control with IBM WebSphere Portal—a simple and fast start to a service-oriented architecture. It works with what we have and integrates the apps, processes and info our people need to do their jobs effectively. Works with our customers and suppliers, too. Now we have a customizable interface that puts everything at our fingertips.

_Productivity is up. Gil says that's great, but he refuses to take off his suit.

Download IBM's WebSphere Portal ROI Tool at:
IBM.COM/**TAKEBACKCONTROL**/PORTAL

Geek's

A STROLL THROUGH THE TECHNOLOGY LANDSCAPE

Robots Down On the Farm

ROBOTS ARE CONTINUING to make inroads into the last bastion of labor-intensive industry – farming and horticulture. In England, University of Warwick researchers are working on a number of robotics and automation products that could vastly reduce the labor costs of farmers and growers. The following are two of them:

This mushroom-picking robot can work 24/7

ROBOTIC MUSHROOM PICKER: The robot's camera "eye" is calibrated to spot and select only mushrooms of the exact size required for picking, at a level of accuracy that far exceeds that of human labor. The mushrooms are then picked by a suction cup on the end of a robotic arm. While the speed of picking is currently just over half that of a human, the robot can pick 24 hours a day. The researchers hope to increase the speed of picking to a rate much closer to that of a human worker.

ROBOT GRASS CUTTER: Mowing the lawn is a problem for farmers and even golf course owners, because to manage such pastures, a skilled employee is required for each tractor. Researchers in the Warwick Manufacturing Group have developed a method of mowing that allows a grower to deploy multiple robotic grass-cutting machines at the same time, all under the supervision of just a single employee using a remote control. They are working to replace the remote control with a computer that will use data sensors attached to each mower, which will autonomously travel across fields, working in groups with other robotic mowers.

GROVES OF ACADEME

Georgia Tech Plots Path to Carbon-based Electronic Devices

Professor Walt de Heer holds a proof-of-principle device constructed of graphene

GARY MEEK FOR GEORGIA TECH

GRAPHITE, THE MATERIAL that gives pencils their marking ability, could be the basis for a new class of nanometer-scale electronic devices that have the attractive properties of carbon nanotubes but could be produced using established microelectronics manufacturing techniques.

Using thin layers of graphite known as graphene, researchers at the Georgia Institute of Technology, in collaboration with the Centre National de la Recherche Scientifique in France, have produced proof-of-principle transistors, loop devices and circuitry. The researchers hope to use graphene layers less than 10 atoms thick as the basis for electronic systems that would manipulate electrons as waves rather than particles, much like photonic systems control light waves.

"We expect to make devices of a kind that don't really have an analogue in silicon-based electronics, so this is an entirely different way of looking at electronics," said Walt de Heer, a professor at Georgia Tech's school of physics. "Our ultimate goal is integrated electronic structures that work on diffraction of electrons rather than diffusion of electrons. This will allow the production of very small devices with very high efficiencies and low power consumption."

Because carbon nanotubes conduct electricity with virtually no resistance, they have attracted strong interest for use in transistors and other devices. However, serious obstacles must be overcome before nanotube-based devices can be scaled up into high-volume industrial products.

De Heer has helped discover many properties of carbon nanotubes over the past decade and believes their primary value has been in calling attention to the useful properties of graphene. Continuous graphene circuitry can be produced using standard microelectronic processing techniques, potentially allowing the creation of a road map for high-volume graphene electronics manufacturing, he said.

"We are doing lithography, which is completely familiar to those who work in microelectronics," said de Heer.

DIFFERENCE ENGINES

Rationalist Roots

Gottfried Leibniz

The ancient Indian mathematician Pingala is credited with the first known description of a binary numeral system in the third century BC (coinciding with his discovery of the concept of zero). However, it was Gottfried Leibniz in the 17th century who first fully described the modern binary system, in his article "Explication de l'Arithmétique Binaire." Leibniz's system, based on ones and zeros, was subsequently employed on all modern computers. He revisited that system throughout his long and varied intellectual career.

Leibniz's genius extended to many fields. Along with Spinoza and Descartes, he was one of the three great Rationalist philosophers. He developed integral and differential calculus independently of Sir Isaac Newton and is usually considered the father of symbolic logic. Leibniz's work anticipated Lagrangian interpolation and algorithmic information theory. His calculus ratiocinator anticipated aspects of the universal Turing machine. In 1934, Norbert Wiener claimed to have found in Leibniz's writings a mention of the concept of feedback, central to Wiener's later cybernetic theory.

Leibniz's calculating machine

In 1671, Leibniz began work on a machine that could execute all four arithmetical operations, inspired by (and competing with) calculating machines developed by Blaise Pascal and Sir Samuel Morland. Over several years, he gradually improved the design of the machine, which was the basis of his election to the Royal Society in 1673. A number of the machines were produced by a craftsman working under Leibniz's supervision. Leibniz didn't consider it an unambiguous success because it didn't fully mechanize the operation of carrying. Historian Louis Couturat reported finding an unpublished note by Leibniz dated 1674 describing a machine capable of performing some algebraic operations.

Leibniz was groping toward hardware and software concepts worked out much later, in the first half of the 19th century, by Charles Babbage and Ada Lovelace. In 1679, while mulling over his binary arithmetic, Leibniz imagined a machine in which binary numbers were represented by marbles governed by a rudimentary sort of punched cards. Modern electronic digital computers replace Leibniz's marbles, which moved by gravity, with shift registers, voltage gradients and pulses of electrons, but otherwise, they run roughly as he envisioned. Most historians of science and technology acknowledge Leibniz's prophetic role in the emergence of calculating machines and formal computer languages.

Geek's Garden

A STROLL THROUGH THE TECHNOLOGY LANDSCAPE

Robots Down On the Farm

ROBOTS ARE CONTINUING to make inroads into the last bastion of labor-intensive industry – farming and horticulture. In England, University of Warwick researchers are working on a number of robotics and automation products that could vastly reduce the labor costs of farmers and growers. The following are two of them:

ROBOTIC MUSHROOM PICKER: The robot's camera "eye" is calibrated to spot and select only mushrooms of the exact size required for picking, at a level of accuracy that far exceeds that of human labor. The mushrooms are then picked by a suction cup on the and of a robotic arm. While the speed of picking is currently just over half that of a human, the robot can pick 24 hours a day. The researchers hope to increase the speed of picking to a rate much closer to that of a human worker.

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UNIVERSITY OF WARWICK

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Using Data We Have to Improve Data We Get

Our manager plans to justify his long budget wish list by using data from tools he has already deployed. By Mathias Thurman

SECURITY MANAGER'S JOURNAL

IT'S BUDGET time, and my work is cut out for me. Let's face it: As a security manager in the IT department of a company that isn't in the security field, I'm not exactly generating revenue. Most of the budget goes to the engineers who make the equipment my company sells for millions of dollars.

This is my first budget season at this company. When I started, the budget was already set, and my share was pitiful. That's to be expected; there hadn't been a security manager on staff for over a year. But I want to do better this year.

I will have an opportunity to make my pitch to upper management for funding the information security department. This presentation must be concise and easy to understand while explaining my objectives, the current state of affairs and the ramifications of not having funding. Then I will put a dollar figure on each item. I don't expect to get all the money I want, but if my justifications are convincing, I could end up with enough to satisfy my top priorities.

Each item on my wish list will have a justification spelled out on a single slide. But in case I'm asked to expand on those justifications, I will also have supporting metrics derived from infrastructure that we've installed since I came on board.

For example, I want to expand our intrusion-detection system (IDS). Currently, we are able to monitor only about 40% of our network, and I want to get as close to 100% coverage as possible. In arguing for the money to do that expansion, I can point to the amount of malicious code, hacking activity and acceptable-use policy violations our current coverage already detects. I will explain that malicious code isn't always stopped or even detected by virus protection and that IDS is a great backup in this area. Malicious code has been the source of several Severity I-type incidents for us over the past several months, sometimes requiring days to clean up after the damage caused by worms on our desktop network. IDS can pick up anomalous behavior, and we can use the signatures to help detect and mitigate this type of activity.

IDS is also useful in detecting attempts by both outsiders and employees to compromise our network, and the metrics we have from the 40% of our network that's covered illustrates that such attacks are all too frequent.

Finally, IDS has helped us keep tabs on acceptable-use policy violations, including the use of peer-to-peer file-sharing programs and online games, that consume our network bandwidth, hurt employee productivity and, in the case of file sharing of copyright-protected software and music, have the potential to cause legal problems.

I'll also point out that our IDS infrastructure is a great source of information when we need to troubleshoot problems with the network, applications or servers, since we can filter for certain types of traffic or IP addresses.

Beyond IDS

Similarly, I would like to expand our use of Tripwire Inc.'s change-control offering to all of our roughly 350 critical servers and network infrastructure. Although we have deployed Tripwire to only 15 or so servers, the alerting and reporting provide a wealth of knowledge regarding files that have changed over a period of time. Not only does that data help us with Sarbanes-Oxley Act compliance, but it also assists in configuration management and incident response.

And speaking of SarbOx, it continues to absorb a significant amount of time for me and my staff. I will detail the various activities associated with SarbOx compliance in an effort to get approval to add to the department's head count.

I want to invest more in our wireless security infrastructure. To justify the need, I can point to the effectiveness of AirMagnet Inc.'s Handheld Analyzer for tracking down unauthorized access points. With just one of these devices, we have been able to identify eight unauthorized access points at headquarters over the past six months. But this is a global company, and unauthorized access points probably reside in locations ranging from India to Ireland.

Next on my list is expanding our use of SecurID Authentication from RSA Security Inc., along with other configuration management tools, to ensure that our infrastructure remains within standards. We use a variety of vulnerability assessment tools that consistently reveal poorly configured routers, unsecured applications and servers that aren't installed according to policy. These tools provide data that will help me demonstrate certain ongoing weaknesses in our environment.

I don't have space to run through all the items on my wish list, but one of my personal goals for the security department this year is to develop a dashboard that will let us quickly see our current security status based on information that's gathered by many of the tools we already use. Such a dashboard would make it easier to implement changes, show return on investment for our security infrastructure and monitor for trends.

Here are some of the sources of information that would be fed into the dashboard:

- Secure Computing Corp.'s SmartFilter, which has been placed on our caching servers to block categories of traffic that are against company policy, such as pornography, gambling, hacking and hate sites.
- Secure Computing's SmartReporter, which tells us the number of attempts to visit restricted sites that were blocked.
- Trend Micro Inc.'s Control Manager, which provides reports enumerating our resiliency to tens of thousands of viruses per week.
- Tripwire, for reports on unauthorized system changes.

I am confident that these data-based justifications will result in the allocation of enough budget to allow us to continue to improve our security posture. ■

WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussions in our security blogs: **computerworld.com/blogs/security**

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SECURITY LOG

[illegible]

How to
Break Web
Software

[illegible]

— Mathias Thurman

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_INFRASTRUCTURE LOG

_DAY 8: I give up. Our infrastructure is so inflexible. Our apps and processes don't work together. We can't respond quickly to change. It's out of control.

_Gil had an epiphany. Duct tape. A few dozen rolls later and he's integrated everything, and everyone, by hand.

_DAY 10: Duct tape can fix many things. Basketballs. Sofas. Doorknobs. But not widespread app and process inflexibility.

_DAY 13: I've found something better: IBM WebSphere middleware. It'll make our infrastructure more flexible by seamlessly integrating our apps. We can change processes in a snap and use what we already have—even apps from SAP and Oracle. And with IBM's industry-specific expertise, we're on our way to enabling a service-oriented architecture.

_Hmmmm...WebSphere. More powerful than duct tape.

Download our IBM SOA assessment tool at:
IBM.COM/**TAKEBACKCONTROL**/SOA

BRIEFS

Greenplum to Offer Database Apps

▪ Greenplum Inc. in San Mateo, Calif., has created a Web portal to offer its open-source and proprietary database applications to businesses for trial use and testing. Available on the newly launched Bizgres Network (*http://bgn.greenplum.com*) are Greenplum's flagship product, the upgraded Bizgres MPP Version 2.1 massively parallel processing database, as well as other products and details on service and support, according to the company. Bizgres MPP 2.1, which is available now, starts at $15,000 per CPU socket and is an enterprise-class distribution of PostgreSQL that is compatible with PostgreSQL 8.1.

iAnywhere Releases Blackberry Software

▪ Dublin, Calif.-based Anywhere Solutions Inc., a subsidiary of Sybase Inc., has rolled out Afaria 5.4 for managing BlackBerry handheld devices from Research In Motion Ltd. Afaria 5.4 allows a company to manage BlackBerry, Windows Mobile Pocket PC, smart phone, Palm OS and Symbian OS devices. New Afaria features for the BlackBerry enable users to lock and remove data and applications from devices and to configure device settings, according to iAnywhere. Afaria 5.4 is available now, starting at $39 per client for up to 100 clients, and the server starts at $5,000.

Symbol Offers Mesh Networking

▪ Symbol Technologies Inc. has unveiled new wireless network infrastructure improvements, including mesh networking. Mesh networking with Holtsville, N.Y.-based Symbol's new 5131 access points allows companies to add access points for Wi-Fi connectivity without requiring Ethernet cables to connect the access points, according to Symbol. The company has yet to announce pricing.

MARK WILLOUGHBY

It All Begins With Endpoints

THE LOWLY ENDPOINT has long been the Rodney Dangerfield of networking, getting no respect while shouldering critical tasks in providing services. But all that anonymity is becoming history as the demands of more robust services push the long-ignored endpoint into the network limelight.

MARK WILLOUGHBY, CISSP, is a 20-year IT industry veteran and journalist. Contact him at [illegible]

The concept of endpoints has morphed with the maturation of networks and the services running on them, evolving from what was once simply defined as whatever is attached to the end of the network into the network's reason for being. The classic example of the endpoint was the POTS (plain old telephone service) phone, which defined network endpoints through the era of the Bells, from when Alexander Graham Bell summoned Watson to when Gordon Bell started preaching about parallelism.

The network endpoints required little in the way of management or security, the functional twins pushing them into prominence today. A phone number, or some other type of circuit hardware address, was all that identified network endpoints. No one thought of those very simple pioneering services in relation to the critical functions driving endpoint evolution now — status, configuration, metrics, operations, events and security. Management and security for those early "dumb" devices were embedded in the network, centralized in the telco switch.

Enter the device endpoint, the next evolutionary step in the endpoint maturity model. Telephones added microprocessors and applications, like voice messaging and Caller ID, requiring a modicum of support to provide these new services. Early computers arrived, relatively crude single-tasking devices with simple network or dial-up services connected to bulletin boards. E-mail emerged as a communications tool that differentiated the digerati.

Device endpoints added some rudimentary management functions, mostly for simple status checks, configurations and operations needed to coordinate phones with the embedded network intelligence or modems communicating with remote servers.

In the era of the device endpoint, the major diagnostic step was rebooting; there were no real-time configuration changes based on events. Endpoints were undiscovered by hackers, who were consumed with "phreaking" the phone network by breaking into network switches.

The application endpoint arrived with the client/server model and is the dominant endpoint paradigm for many today. Client/server ushered in the era of "lights out" computing and shifted network management from centralized network intelligence to the endpoints. For the first time, logical endpoints exercised real control over events, status and configuration for application transport and connection management. They do it for the network and its attached computing platforms.

Circuit-switched public telephone networks in the era of application endpoints were superseded in importance by packet-switched networks. Network management systems arrived and embedded management agents in distributed devices, clients and servers. Downloading patches and updating client software became routine, with applications configured and network traffic optimized for events or wall-clock times to optimize workloads. E-mail became a critical function, hackers discovered how easy it is to break through security perimeters, virus writers made security a corporate priority, and most people heard the term *endpoint* applied to networks for the first time.

The final step in the endpoint maturity model is the service endpoint, as defined by the W3C. In that definition, there is only one supercharged converged packet-switched network with a plethora of services replacing the mix of applications and agents that are old.

Endpoints have added policy management to constantly monitor changing metrics and events in real time, to control status and configurations for connections, services and presence. All services are delivered over component architectures, and endpoints are integral to managing service interoperation and enforcing security throughout the network.

We still are evolving the mix of network services in tandem with the service endpoint. Communications blur into messaging across multiple channels, including wireless, with real-time voice over IP, instant messaging, multimedia and videoconferencing. Real-time services place unique demands on connection and transport management of packet-switched networks, requiring smart and agile endpoints to maintain persistent service connections.

The big bang created the universe, millions of light-years wide, in a trillionth of a second, while network endpoints have evolved to prominence at a leisurely pace. The endpoints are out there now like logical pulsars and quasars marking the network service boundaries, telling us if we're expanding or contracting and how much bandwidth we will need for the journey. ▪

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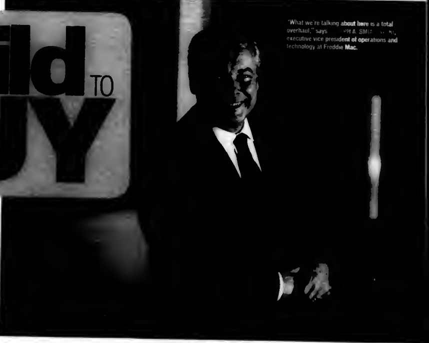
HOW TO
Earned Value Management
EVM is a tool for getting control of projects before it's too late, and more companies are using it in IT every day. Here's how it works. **PAGE 48**

WHO'S WHO IN IT
It's About Trust
Twenty-year IT auditing veteran Ross Wescott says, please don't think of him as an adversary. His job is to help you succeed. **PAGE 50**

OPINION
Learning With Peers
Solitary learning is fine to a point, but Paul Glen has noticed that most eureka moments come when you're "in the flow" of intense conversation with peers. **PAGE 54**

FROM Build TO BUY



"What we're talking about here is a total overhaul," says [illegible]PH A. SMI[illegible], executive vice president of operations and technology at Freddie Mac.

RHODA BAER

COMPANY:

LOCATION:
BUSINESS:

SIZE OF IT STAFF:

Freddie Mac wrestles with the cultural challenges of a huge software shift.

By Thomas Hoffman

"Change" is the operative word at Freddie Mac these days.

Following an accounting scandal in which the McLean, Va.-based mortgage purchaser understated its earnings by almost $5 billion between 2000 and 2002, Freddie Mac, formally known as Federal Home Loan Mortgage Corp., is undergoing a series of wrenching structural changes that are fundamentally altering how the company operates. (On March 22, Martin F. Baumann, Freddie Mac's executive vice president and chief financial officer, resigned after the company had to delay plans for reporting its 2005 financial results until May.)

The accounting scandal is just one of the drivers behind these changes. Freddie Mac is also moving from being a so-called voluntary registrant on the New York Stock Exchange to a full-fledged Securities and Exchange Commission registrant beginning this spring. It must then comply with the Sarbanes-Oxley Act and other regulations.

Moreover, as a growing number of homeowners tap into their home equity, Freddie Mac, like other banks and mortgage providers, is expanding the types of products and services it's offering to customers. With increased competition in the market, Freddie Mac has also heightened its focus on operational efficiency.

"What we're talking about here is a total overhaul" of how Freddie Mac operates, including its IT organization, says Joseph A. Smialowski, the company's executive vice president of operations and technology. To help support the company's need to add new capabilities more quickly and easily, the former Sears, Roebuck and Co. and FleetBoston Financial Corp. CIO is overseeing a major effort to shift IT from its historical approach of building its own software applications to a buy-and-integrate model.

Smialowski, who joined Freddie Mac in December 2004, declined to quantify how much Freddie Mac is investing in its buy-and-integrate program this year. He did say that the amount is in the nine-figure range and represents a portion of the $350 million that the company plans to invest in new IT initiatives in 2006.

A New Way

The transition requires a huge cultural shift within Freddie Mac's IT group, say Smialowski and his lieutenants. For instance, application developers within the company's 1,700-person IT division who had been focused on writing code are now more focused on integrating data between packaged software, and customizing and configuring commercial systems. Project managers who once oversaw in-house development projects are learning new skills such as vendor relationship management and contract management, says Kunkun Callaghan, a business technology partner director.

Making the transition isn't easy. Building applications "was a source of pride" for developers, says Kim Petty, a vice president of the single and multifamily sourcing and servicing business information services group, which supports the systems used to buy and service mortgages. "Now you're trying to show people that they're adding value with a different type of skill set," says Petty, a 17-year company veteran.

The intent is to eventually have a formal training program for developers and other IT staffers who are being affected by the build-to-buy transition, says Petty.

But meanwhile, IT staffers who are skilled in areas such as vendor and contract management are being "seeded" into different business divisions in order to help train their colleagues. At this point, most of the retraining that developers are receiving in areas such as understanding software license agreements is being done on a one-on-one basis or through workshops with these mentors.

Although a small percentage of Freddie Mac's development team have opted out of the retraining and have left the company, Petty and other IT managers are working hard to convince the remaining developers that they are needed to handle other requirements "and they aren't going away," she says.

This type of transition "is a tremendous shift" for developers, says Marc Cecere, an analyst at Forrester Research Inc. in Cambridge, Mass. As Freddie Mac moves to using packaged applications, he says, some modifications will be made to those systems, "and that's a different type of development" for those who will remain in programming-oriented roles.

The 80/20 Rule

How much actual modification Freddie Mac makes to packaged applications it integrates is yet to be seen. That's because another key challenge that Petty and other IT managers face is to persuade business process owners to understand and accept the so-called 80/20 rule: recognizing the most important functionality provided by a packaged application (80%) and forgoing the less critical but nice-to-have features (20%). That's a big mind shift for business managers who are accustomed to having applications built to their specifications, says Cecere.

At Freddie Mac, accepting 80/20 will also require business owners to change some of their work processes to accommodate packaged applications rather than change the technology to fit existing practices, says Petty. She adds that the business owners she has worked with have been receptive to this concept so far, "but it's still early on" in the transition.

Even so, the IT group can point to a number of concrete steps it has taken. IT managers have reversed the IT project team mix from 60% contractors/40% staffers by adding 200 full-time IT employees and reducing the number of contractors in order to better retain and transfer project and technical knowledge within the organization.

They are also evaluating the adoption of standards certifications such as Cobit, ISO 17799 and the Software Engineering Institute's Capability Maturity Model.

Meanwhile, IT project teams are identifying business requirements earlier in the project development cycle and giving more consideration to how an IT project for one business unit may affect the entire organization. They're also documenting their new work processes using software tools such as Microsoft Corp.'s Visio and conducting postmortem reviews within 30 days of production in order to capture lessons learned.

Regional Expansion

Freddie Mac's organizational transformation is also leading the company to expand its IT workforce to other locations. Before the transition began, 95% of Freddie Mac's full-time IT workers were based in Northern Virginia. Now, Smialowski is determined to establish regional development centers in other major markets where Freddie Mac has offices, such as New York and Atlanta, to add people who have financial services and/or buy-and-integrate experience.

Edward Albrigo, vice president of Freddie Mac's enterprise programs office, was charged with establishing the first beachhead in Chicago. He found someone to manage the group in November and has since hired 20 technologists who will be involved in revamping Loan Prospector, the company's automated underwriting service, which processes about 60% of the mortgages it buys.

Albrigo says he has had few problems finding qualified people in Chicago, thanks in part to UAL Corp.'s Chapter 11 bankruptcy status in 2005 as well as fallout from the recent merger between Kmart Corp. and Sears. Metro Washington, in contrast, "is an extremely tight [IT] labor market" as a result of widespread corporate growth and demand for IT workers by the federal government, he says.

Freddie Mac's IT organization has made progress, but it still faces challenges as it moves to a buy-to-integrate approach. These include adapting its project delivery methodology and attacking an ingrained bias against packaged applications, which have historically been viewed as too lightweight to handle Freddie Mac's enormous processing volumes, says Albrigo.

Freddie Mac's IT managers recognize that they won't overcome these obstacles overnight. But they're determined to get it right. Says Chief Technology Officer Milton Moore, "I'm a proponent of whatever it takes to get Freddie Mac to market faster." ●

Revamping

SINCE JOINING FREDDIE MAC in December 2004, Joseph A. Smialowski, executive vice president of operations and technology, has also become chairman of the company's executive management committee on capital expenditures. The Resource Allocation Committee, which Smialowski formed when he joined the company, also includes Freddie Mac's chief financial officer, chief operating officer and chief investment officer. It meets quarterly (and additional times, when needed) to examine the status of the company's IT-business project portfolio and to consider new requests for funding.

Prior to the formation of the committee, IT projects were evaluated separately for each business unit on a case-by-case basis, with less consideration given to the overall effect or benefit to the company, says Smialowski. The new enterprisewide emphasis, in which senior business executives apply portfolio management techniques to weigh the anticipated benefits of proposed IT projects, "is like a night and day change" from the previous approach, says Smialowski, who drove similar IT governance changes when he was the CIO at Sears and FleetBoston between 1995 and 2004.

The new rationale for IT projects has also made it easier for top business executives to see all of the IT-business projects that are being worked on, explains Edward Albrigo, vice president of the enterprise program office at Freddie Mac. And the heads of business units can see all of the IT projects that are being proposed and judge whether they contribute to the needs of the entire business. "There's a broader view of what our objectives are," says Albrigo. "It's far less siloed than it was before."

– THOMAS HOFFMAN

Simplifying Storage with Partner S

Microsoft Presents

Solving Real World Storage Problems

Windows
Storage Server 2003 R2

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BROCADE
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KOM NETWORKS
EMULEX
LeftHand NETWORKS
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Spiraling Storage Costs?

You need an efficient storage strategy.

As your storage needs grow, the cost of managing it need not spiral out of control. Our vision - Universal Distributed Storage - is about:

- mainstreaming high end storage functionality
- solutions built on industry standard hardware
- a broad partner ecosystem

Our next generation of Server and NAS products – Windows Server 2003 R2 and Windows Storage Server 2003 R2 – will help you further reduce your storage costs.

Functionality	Benefits	Windows Server 2003 R2	Windows Storage Server R2
File Server Resource Mananager (FSRM)	Quota management, file screening and reporting	√	√
Storage Manager for SANs (SMfS)	SAN provisioning and management	√	√
Windows Sharepoint Services (WSS)	Built-in document collaboration	√	√
Distributed File System - Namespace (DFS-N)	Namespace virtualization	√	√
Distributed File System - Replication (DFS-R)	Efficient Wide Area File services	√	√
Print Management Console (PMC)	Remote printer management	√	√
Single Instance Storage (SIS)	Efficient storage utilization	X	√
Full Indexing	Effective document search and retrieval	X	√

To learn more about Microsoft storage technologies and breadth of partner solutions, visit: http://microsoft.com/storage

Microsoft Windows Server System

Microsoft

A Letter from Microsoft

April 3, 2006

Dear Storage Solution Seekers,

As more and more server data has moved away from internal and Direct Attached Storage (DAS) resources, the Windows platform has evolved to provide a wide variety of robust network storage solutions including its own NAS operating system called Windows Storage Server.

By embracing the concept of Universal Distributed Storage, the Windows server platform has become one of the most storage-focused operating systems available. The concept of Universality captures Microsoft's goal to bring high-end storage features and solutions to the mainstream of IT administration.

Microsoft's vision of Distributed storage has enabled the creation of an industry standard server platform that easily integrates within the most complex Storage Area Networks (SAN). This platform is optimized for the storage workload, but it also offers the flexibility to be used as an application platform for a multitude of workloads in a variety of IT deployments.

With applications running on Windows servers becoming ever more prevalent in data centers, an enterprise class storage architecture has proven to be necessary. To reach this goal, it is not enough to focus on the server platform alone. In order to provide solutions that are simple to deploy, simple to use and simple to maintain Microsoft is working with a large partner eco-system to develop a wide variety of storage solutions that meet the needs of large enterprises and smaller businesses alike.

Working with its partners, Microsoft has launched a series of initiatives to simplify storage deployments and to help businesses achieve a better return on their storage investments. We are pleased to showcase a wide variety of partners and "mini" case studies in this supplement and the important roles that they play in providing innovative storage solutions for Windows customers. Similarly, we are pleased to announce the availability of the latest version of our NAS appliance OS, Windows Storage Server 2003 R2 which will be offered by multiple OEMs some of which are highlighted in this supplement.

Our partners are addressing real world storage problems with a broad array of solutions that illustrate the commitment that Microsoft has made to support industry standards and develop a rich partner eco-system that complements the Windows server platform. Microsoft has introduced new port drivers that are optimized for Fibre Channel, a new iSCSI architecture (initiator and target) that facilitates the implementation of SANs, new utilities, an API that simplifies storage management, an integrated snapshot engine, and more....but all of these tools and features are just the beginning of Microsoft's efforts to solve real world customer problems.

It is the breadth, richness and depth of our partner eco-system that will ensure better solutions for customers. We are pleased to feature some of our top partners in this supplement and to provide concrete examples of real life storage problems that Windows partners are solving today.

Claude Lorenson, Ph.D.
Group Product Manager, Storage
Microsoft Corporation

Microsoft Partner Profiles and Case Studies

[illegible]

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Claude Lorenson, Ph.D.
Group Product Manager, Storage
Microsoft Corporation

Microsoft Partner Profiles and Case Studies

Brocade: Quick Time to Application

emBoot: Simplifying Storage Management

Emulex: Austin Radiological Associates

EqualLogic: Johnson Health Network

FileKeeper: [illegible] Technologies

Hitachi Data Systems: Application Optimized Storage for Microsoft Exchange

Hewlett-Packard: [illegible] Denmark

IBM: Simplifying Storage Complexity

[illegible] Networks: [illegible] Securities Investments

LeftHand Networks: [illegible] Consulting

Northern Parklife AB: UPMC Health System

PolyServe: Petroleum Heat & Power Co., Inc.

QLogic: [illegible] DSG

Sanbolic: [illegible] Industries

Quick Time to Application

Brocade
San Jose, CA
www brocade com

[illegible]

In order to comply with the needs of its customers, and to help them solve the storage problems that impact their business bottom lines, Brocade—which recently acquired enterprise file data management solutions vendor NuView—has invested in a number of Microsoft-compatible software technologies that will help users better manage their data in Windows Storage Server environments. The end result of these investments is the Tapestry product line.

The Challenge

Developing a quick time to application is a challenge well worth overcoming, and storage networking users who wish to meet this goal will be interested in the Tapestry Application Resource Manager (ARM).

Brocade's Tapestry ARM provides Microsoft Virtual Server customers Enterprise deployment and mobility capabilities providing rapid movement (within seconds) of virtual machines anywhere in the storage network. This enables enhanced server consolidation, load balancing and migration solutions that significantly improve data center agility, business continuity and capital utilization.

This tool allows deployment of a bare metal server with no internal storage to view operating system images, application images and all the data they need from SAN-based volumes. The server sees the software, reboots and within a minute or two, the server interacts with the software on the SAN as though it was on its C drive. It then operates applications from the SAN, building the desired quick time to application.

The Virtual Server team at Microsoft has endorsed Tapestry ARM as one of the technologies that can be applied toward the rapid deployment of applications in the enterprise.

The Solution

Wide Area File Services (WAFS) technology is a key to the global manageability of corporate files and file systems. Brocade's WAFS product provides a solution based on Microsoft Windows that allows companies to better manage the files they have traditionally maintained at branch offices. This is accomplished by moving these remote files back to the corporate headquarters and providing rapid remote access to them from that centralized point. Although several vendors offer products in this space, Brocade's solution (based on technology from Tacit Networks) is the only one that is based on Microsoft Server technology.

Simplifying Storage Management

emBoot, Inc.
Mississauga, Ontario
www.emboot.com

[illegible] FOS [illegible] system. [illegible] emBoot has applied its expertise by enabling boot from iSCSI SAN using the Microsoft iSCSI initiator and Ethernet adapters, storage management is greatly simplified by relocating all storage [illegible] from the [illegible] to SAN. Headquartered in Mississauga, Ontario, Canada, emBoot is privately held. For more information visit www.emboot.com.

emBoot's winBoot/i enables the iSCSI boot of Windows Server 2003 using the Microsoft iSCSI software initiator and standard Ethernet adapters. Booting from iSCSI makes system administration easier, and freeing servers from their boot volumes allows administrators to manage investments in their iSCSI SANs. This enables them to attain improved data security, integrity and recovery, higher availability, quicker server deployment and repurposing. The end result is more efficient utilization of storage resources.

The Challenge

Implementing the centralized management of boot parameters is especially effective and cost-efficient in IT environments with large numbers of servers, where it offers an alternative to more costly iSCSI host bus adapters.

Given the intense IT focus on disaster recovery, the ability of winBoot/i to locate the operating system onto a SAN is especially valuable to IT departments, who are able to regain lost functionality from their disaster-impacted sites within minutes.

The Solution

With winBoot/i, server failures can bypass traditional recovery processes that involve reinstalling operating systems and backups from tape to stand-by servers. Instead, spare servers can easily be booted from SANs, which allows them to access the complete operating system, applications and production data.

Other benefits include:

- Boot images can be cloned and assigned to multiple servers, which is ideal for new deployment or short-term expansion of heavier production workloads.
- Blade/diskless servers take up less space and are less expensive, providing reduced power consumption and cooler operation.
- Data management features native to SANs—including backup/restore, data replication, snapshots, mirroring, disk capacity resizing and others—are now extended to boot drives.
- Cost reductions are realized via server and hardware consolidation
- External RAID controllers and multi-pathing provide higher availability.

Austin Radiological Associates

Emulex
Costa Mesa, CA
www.emulex.com

Award winning storage networking solution offerings from Emulex include host bus adapters (HBAs), embedded storage switches, storage I/O controller and SAN storage switch products. Emulex seeks to deliver the benefits of storage networking to an increasingly diverse audience of end users ranging from small businesses to sophisticated enterprise data centers.

EMULEX
We network storage

Austin Radiological Associates is a $100 million provider of everything from routine X-rays to CT and MRI scans. Since its move to a digital Picture Archiving Communications System (PACS) two years ago, the firm has been relying on Emulex host bus adapters to quickly and reliably move and back up the gigabytes of data it generates to help physicians diagnose and treat patients.

ARA's move from film-based to digital imaging began three years ago and took 12 to 18 months to implement.

The Challenge

"Phase one was pulling out our Frame Relay network and deploying a SONET ring throughout the city for high-speed image transfer," says ARA Chief Information Officer Todd Thomas. "Phase two was getting away from our tape-based backup system which was taking anywhere from three to four days to do a complete backup of the system. Once we started moving to digital images, we wanted something that would allow us to do very, very quick backups of increasing amounts of data."

Today, using the SAN linked to its 65 servers with Emulex HBAs (most of which run at 2G bit/sec) the company is able to back up more than 5GB of data in one hour.

PACS utilizes about 65 servers, most of which are running Windows 2000 and Windows Server 2003, linked to an EMC Symmetrix DMX 1000 for primary storage, from which data is regularly backed up to two Centera systems (which in turn are replicated to ARA's co-location facility).

The Solution

The SAN has more than paid for itself by not only improving the productivity of ARA's own practitioners, but by allowing ARA to offer image storage and retrieval services to health care providers as an Application Services Provider (ASP). Since installing the SAN, ARA has relied on approximately 70 Emulex HBAs to link its servers to the EMC SAN. "We've never had a problem with the Emulex cards," says Thomas. "We plugged the cards in, we configured them to talk to the storage fabric and they've just run." The minor changes that have been required, such as BIOS upgrades, have required only minor staff time, he says.

Johnson Health Network

EqualLogic, Inc.
Nashua, NH
www.equallogic.com

EqualLogic is a provider of iSCSI based, all inclusive storage area network (SAN) solutions that enable businesses – from Fortune 500 to small and mid-size organizations – to realize the economic benefits of consolidated, self managing storage. By replacing cumbersome, labor-intensive administrative tasks with automatic, self managing intelligence, EqualLogic solutions enable fast, flexible storage provisioning and dramatically reduce the time and costs required to manage and maintain a SAN environment – locally or remotely.

EQUALLOGIC

The Challenge

Network Systems Specialist Mark Rivard manages and supports IT for the Johnson Health Network, including more than 1,000 user accounts. The data center is located in Johnson Memorial Hospital, with domain controllers at the offsite locations. The IT infrastructure includes Windows 2000 and 2003 servers, Windows NT 4.0, PCs from Windows 95 through XP, and Citrix profiles.

When faced with a sudden doubling of storage capacity needs, Rivard knew it was time for a change in storage infrastructure. Key requirements for new storage were simplicity and the ability to manage storage in-house.

We had a small Fibre channel SAN from EMC/Data General, but didn't manage it ourselves as it was so complex, he recalls.

The Solution

Before buying from EqualLogic, Rivard looked at Fibre Channel solutions from EMC and HP, and at iSCSI from EqualLogic and LeftHand Networks. Comments Rivard, "The primary reasons we went with iSCSI were ease of use, ability to self-manage, and integration into our existing network. And cost – the price of a Fibre Channel solution was not bad up front, but it would cost so much more than iSCSI to expand down the road – about $3,000 per server compared to basically just a $100 NIC."

Selecting the PS Series array from EqualLogic was an easy choice. "We chose the PS Series array because of the management and redundancy of the system," says Rivard. "We can manage and support it ourselves – redundant, hot swappable disk drives and components make it easy. And the array does so much on its own, from RAID configuration to load balancing. Plus, we think that the PS Series architecture is a more modern technology, especially how it stripes across multiple boxes as you expand it."

Rivard uses the PS100E to support the Windows file servers and Exchange e-mail servers, and he plans to set up clustered servers for the Citrix profiles next. But the bulk of the capacity is used as a virtual tape library for backup. By backing up all files to the PS Series array, he speeds backup and minimizes network traffic. "This was a primary reason for buying the PS Series array," he notes. "Keeping online backups really helps for quick recovery – then I can send data off to tape whenever I want."

IdleAire Technologies

Facts

FileKeeper, Inc.
Knoxville, TN
www.filekeeper.com

[illegible]

FILEKEEPER

IdleAire Technologies provides air conditioning, power, Internet access and entertainment to long-haul drivers parked overnight at travel centers, distribution centers and seaports. IdleAire's innovative service module approach allows drivers to turn their engines off while parked, helping to save on fuel costs, avoid engine wear and reduce air pollution.

IdleAire's goal is to deploy service modules to the over 3,800 travel centers in North America. Toward that end, the company is designing a scalable, secure infrastructure to protect the large amount of proprietary data created by IdleAire's mobile sales force and remote office users.

"We have a unique challenge in that each new IdleAire travel center requires on-site staff with at least one laptop and one desktop PC," explains Chief Technology Officer Jon Duren.

According to Duren, IdleAire has developed a potent one-two punch, noting, "During the course of our technology evaluation, we found that combining FileKeeper with Microsoft's Data Protection Manager (DPM) provided our mobile and remote office users with a flexible, comprehensive file protection and versioning solution."

FileKeeper protects files stored on the local hard drives of IdleAire's laptops/remote office workstations and provides mobile/remote office users with a simple point-and-click interface to quickly restore accidentally deleted and overwritten files.

Microsoft DPM provides continuous data protection for files stored on IdleAire's corporate file servers. Additionally, IdleAire tested DPM across their wide area network to provide off-site, disaster recovery backups of its corporate file servers and FileKeeper backup locations.

According to Jimmy Jackson, Senior LAN Administrator at IdleAire, "Neither FileKeeper nor DPM requires much on-going administration. We defined a set of enterprise-wide data protection policies, then let the products automatically enforce them."

Duren sees a positive change on the horizon, declaring, "Before FileKeeper, we were lucky if our users followed corporate policy and copied their important files to our network file servers. Today, we know their data will be there, it's secure, and our users can restore the files themselves without tying up our limited IT staff or involving complex file restore procedures."

Application Optimized Storage for Microsoft Exchange

Hitachi Data Systems
Santa Clara, CA
www.hds.com

Hitachi Data Systems leverages its global R&D resources to develop storage solutions that deliver industry leading technology with the performance, availability and scalability to maximize customer ROI and minimize their risk.

HITACHI
DATA SYSTEMS

The Challenge

Microsoft Exchange users want solutions that ensure application availability and eliminate down time due to infrastructure maintenance. They want tools that allow storage administrators to address Exchange performance and availability issues and drill down to the underlying causes.

Beyond that, they require up to three tiers of storage within a single 19-inch rack, enabling them to: (1) use the most economical storage tier (Fibre Channel or SATA) and still meet even the most stringent Exchange performance requirements; (2) move backup data to low-cost SATA drives, and production files to high-performance, 10,000 RPM Fibre Channel drives; and (3) move data between tiers without disrupting the Exchange server.

The Solution

One large IT services provider was able to increase their number of Exchange users from 43,000 to over 98,000 while reducing the nightly backup window and improving their disaster recovery capability. The provider keeps production Exchange workload on high performance Fibre Channel disk drives, meeting all of their customers' service level agreements, and keeps all backups on lower cost SATA drives.

In this advanced environment, Exchange files are copied nightly to a secondary site. Point-in-time changes are snapcopied every 20 minutes and then copied offsite during the day. In the event of a disaster, only a few minutes of data is exposed and Exchange can be back up and running at the secondary site within hours. Exchange copies are kept on SATA drives for up to 90 days, and then moved to tape once a restore is unlikely. SATA is also used for archiving purposes.

Following its Application Optimized Storage approach, Hitachi Data Systems meets the challenges of Microsoft Exchange environments through products such as its HiCommand Quality of Service (QoS) for Exchange, Hitachi ShadowImage, which enables point-in-time full-volume backup, and Copy-On-Write Snapshot software, which enables changes to be captured frequently. Hitachi TrueCopy Remote Replication software copies volumes and journals to secondary sites. Even large Exchange environments can take advantage of the lower-cost but powerful Hitachi TagmaStore Adaptable Modular Storage family.

Atkins Danmark

Hewlett-Packard
Palo Alto, CA
www.hp.com

HP takes a holistic approach to storage consolidation. We [illegible] the [illegible] for business and [illegible] this strategy offers [illegible] organization. We focus not just on technology but on the people and processes that are crucial to your consolidation initiative. We address not only your storage environment — enterprise storage solutions, storage area networks (SAN), networked attached storage (NAS) — but related issues spanning your network, servers, and software as well.

invent

Working closely with Denmark's National Transportation Authority (NTA), Atkins Danmark and other companies involved in public works projects are required by the Danish government to carefully document and archive every project element. Atkins must archive everything from bids and designs to construction and maintenance reports for up to 20 years.

The Challenge

In late 2003, Atkins Danmark decided to move to a solution that could meet the firm's growing need for scalable storage capacity.

The Solution

In early 2004, HP Services implemented the new Atkins Danmark SAN storage infrastructure, which included the HP StorageWorks EVA5000, an HP ProLiant DL380 G4 Storage Server, and an HP StorageWorks ESL 712e enterprise-class tape library. The new HP SAN supports the firm's network of more than 50 HP ProLiant servers, including 20 ProLiant BL10e and BL20p server blades. The storage virtualization provided by the new HP SAN solution is helping Atkins ensure optimal utilization and better match IT resources to business demands.

To provide users with self-service file restoration, the Atkins IT staff uses a built-in feature of the new Microsoft Windows Storage Server 2003 operating system to maintain a shadow copy of the Microsoft Exchange database and logs on an HP ProLiant Storage Server. According to Kjærlund, "We can immediately consolidate network storage and make it available to users. Consequently, users get faster service and our help desk gets fewer calls."

The HP ProLiant Storage Server provides Atkins with multi-protocol file support and compatibility with the firm's SAN. This NAS/SAN fusion provides users with efficient, fast storage access without reducing core SAN performance. A web-based interface provides easy setup and remote manageability.

Kjærlund relies on HP Services consultants to assist his IT staff of seven with the Exchange migration as well as other large implementation and migration projects. "The Microsoft Exchange migration is a very big and important project for us," Kjærlund concludes. "HP's products and services help us at every level - HP is one of our most critical partners."

Simplifying Storage Complexity

IBM Storage
White Plains, NY
www.ibm.com

IBM is a market leader in the storage industry. Innovative technology, open standards, excellent performance, a broad portfolio of storage proven software, hardware and solutions offerings - all backed by IBM with its recognized e-business on demand leadership - are just a few of the reasons why you should consider IBM storage offerings.

IBM eServer Storage Servers are a group of Network Attached Storage (NAS) servers based on IBM eServer xSeries and IBM BladeCenter hardware technology and the Microsoft Windows Storage Server 2003 operating system.

The Challenge

At a time when storage system complexity has become a serious management problem for many companies, users are looking to simplify their storage infrastructures and streamline their business processes.

The Solution

Many organizations are looking for storage products that can be closely focused on specific tasks. Sometimes referred to as appliances, IBM eServer Storage Servers work on a fixed-function basis, and have been designed to help customers meet their expanding file server storage needs. They also serve as NAS solutions for businesses of all sizes.

Featuring xSeries or BladeCenter hardware and Microsoft Windows Storage Server 2003 software, IBM xSeries NAS devices offer a very attractive value proposition for file and print server clients. IBM's xSeries NAS devices are designed for fast installation and can easily cost 40% less than standard server implementations because customers never need to purchase user licenses.

For companies faced with the challenge of storing, managing and retrieving a growing volume of data, these servers can form the basis of an industry-standard NAS solution that's highly reliable and easy to use.

In addition to utilizing the upcoming version of Microsoft Storage Server, IBM's next generation of NAS products will include a limited set of one-year licenses for a product from IBM Tivoli called CDP. Short for Continuous Data Protection, CDP is software used to back up PC files on a continuous basis. The IBM NAS CDP solution will enable companies to easily implement a continuous PC back-up solution that helps them protect their data.

Credicorp Securities Investments

KOM Networks
Ottawa, Ontario
www.komnetworks.com

KOM Networks [illegible] storage management and archiving software solutions featuring Hard Disk [illegible] WORM [illegible] Information Life Cycle Management (ILM) [illegible] and Data Retention. KOM Networks' flagship product KOMworx, built on Microsoft Windows platform, simplifies storage management and helps Financial, Healthcare and other organizations archive and protect data. KOM Networks provides clients 24 x 7 support and [illegible] with superior service.

Integrating different vendor products and revamping existing application architectures can be a daunting task, and it kept Credicorp Securities Investments (CSI) of Miami searching for over six months to find the ideal storage management solution to implement SEC 17a-4 and NASD compliance.

CSI, a subsidiary of Credicorp—the largest financial services holding company in Peru with total consolidated assets of $9.1 billion, needed a solution that would archive and protect data beyond its existing hard disk storage.

The Challenge

The goal was to find a cost-effective storage solution that would dovetail into existing Mobius Management Systems' E-mail management software, and support secure archiving to WORM media.

The Solution

CSI chose KOM Networks' KOMworx software, which provides a policy-based and dynamically managed ILM solution. KOMworx Compliance software was ideally suited for integrating a "virtual volume" behind Mobius' ViewDirect software, transparently capturing and archiving e-mails in an unalterable, protected format to either a hard disk or optical storage on a jukebox.

In addition to facilitating their compliance requirements, KOMworx provided CSI with a disaster recovery solution by giving them the ability to store data on portable media. Using the KOMworx Compliance e-WORM++ feature, collected data is archived to WORM disk storage as well as replicated to a WORM optical media, enforcing record retention policies.

KOM Networks collaborated with Mobius to stage the solution and create the blueprint. The ViewDirect solution was installed and configured by CSI with help from Mobius over the phone. Then the KOMworx software was installed on the Windows Server in minutes, and the complete solution was in place within three hours.

According to Mobius Product Manager Miguel Rodriguez, "The simplicity of working with KOMworx to create a secure and compliant storage solution combined with the flexible e-mail archiving, classification, storage, and retention rules provided by ViewDirect E-mail Management proved to be an excellent solution for CSI."

Fowler Contracting

LeftHand Networks
Boulder, CO
www.lefthandnetworks.com

LeftHand Networks offers Open iSCSI SANs powered by SAN/iQ clustering software. Customers can choose from multiple industry-standard hardware modules to meet a variety of availability and performance requirements. The hardware modules are clustered using SAN/iQ to create a highly available, scalable storage pool. The company's patented architecture maximizes data availability, allows users to start small and grow the SAN as the need arises, and simplifies management. The LeftHand SAN is ideal for primary storage and server consolidation, campus SANs and disaster recovery.

Fowler Contracting is a business running in fast-forward—with the awards to prove it. The company's rapid growth has lead to it being listed as one of the 50 fastest growing private companies in the Research Triangle region of North Carolina for the last three years. As a result, business is booming. And so are its storage needs.

The Challenge

With all of Fowler's storage being housed on stand-alone servers, administering them was becoming very cumbersome, and their reliability was becoming suspect. Given the company's rapid rate of growth, Information Technology Manager Scott Bowen knew it needed more flexibility for expansion without the risk of downtime.

The Solution

The LeftHand SAN was implemented, consolidating seven servers across three locations and adding 1.6 TB of capacity. Critical applications like Microsoft Exchange, SQL Server, Fowler's bidding software package, Bid2Win, Cheetah StreetSmarts accounting applications, and automated maintenance records for construction equipment were all migrated to the LeftHand SAN. In addition, the CAD files used in digital terrain modeling for each construction site were migrated for live access. The entire implementation process took only four hours, including data migration.

Fowler is using SAN/iQ's Network RAID Level 2 to stripe and mirror data across the cluster to ensure data availability. The solution's redundancy is of great value to Bowen. "The fact that you never lose access to your data even if you have to upgrade firmware or bring a box down is crucial to me," Bowen says. In addition, the SAN/iQ Snap feature means that everything is kept up-to-date during the day and that no more than an hour's worth of data will ever be lost.

The advanced provisioning feature is also an important component of the solution. "Never having to re-provision servers with the auto-grow capability is a big deal," Bowen states, adding the centralized backup process is another area where there has been significant time savings.

UPMC Health System

Facts

Northern Parklife AB
Tampa, FL
www.northern.net

Northern Parklife AB Inc. is a pioneering developer of Windows-based storage management software. Northern has focused on storage management solutions since its inception in 1995. Headquartered in Stockholm, Sweden with a North America base in Tampa, Florida. Northern's software is available in 52 countries worldwide, currently serving a 28,000 + global customer base.

NORTHERN

What's to be done when an enterprise network suffers from seemingly irreversible data congestion?

An organization that grows as fast as UPMC Health System requires a responsive, resourceful IT staff, particularly if it's required to maintain peak network performance on a tight budget. Karen Malik, Manager of Network Servers and Desktop Design at UPMC Health Systems, oversees a staff that installs and maintains Microsoft Windows servers in an expanding 325-plus server environment. She also manages a staff of developers that sets up desktop standards and deploys standard desktop OS and software packages.

With 25,000 employees, the network's storage capacity, about 1.8 terabytes of user data, was constantly in jeopardy of being overtaken by personal data.

The Challenge

According to Malik, "Some users will take up infinite disk space, causing a challenge in keeping disk space available for our large number of users. Before implementing Northern Storage Suite we had no charge-back method, so ISD was financially supporting all server hardware and we simply couldn't afford not to control the disk usage."

The Solution

After reading a review in an online newsletter, Malik downloaded and installed Northern Storage Suite. Since then, UPMC has purchased 12 licenses, providing the IT organization with a seamless, transparent means of managing their storage resources.

Northern Storage Suite is an enterprise storage resource management (SRM) solution offering an array of what the company refers to as "zero administration, hassle-free features" and encompassing disk quotas. The package also includes a user-oriented storage portal promoting self-management, the automation of fundamental SRM tasks, and the ability to alleviate the burden of storage costs via a system of chargebacks. Also with Northern Storage Suite, storage is transparent through comprehensive reporting.

By placing quotas on the users and common storage areas, UPMC was able to manage their data without the purchase of additional hardware.

"Northern Storage Suite runs smoothly and quickly," Malik declares. "Northern Storage Suite has made UPMC more productive, which is, finally, what it's all about."

Petroleum Heat & Power Co. Inc.

PolyServe, Inc.
Beaverton, OR
www.polyserve.com

PolyServe develops software that creates scalable, highly available computing utilities for databases and file serving. A core component of all PolyServe's products, Matrix Server is comprised of a cluster file system and a clustered volume manager that virtualizes Windows servers, Windows Storage Server platforms and industry standard storage. With Matrix Server all servers can simultaneously read and write to shared data on a storage network while maintaining the speed and integrity of local attached storage. This enables customers to more effectively manage large-scale Windows server installments, often reducing operating costs by more than 50%.

POLYSERVE™

As the largest heating oil company in America, the Petroleum Heat & Power Co., Inc. (Petro) has a track record of effectively implementing IT technology.

This commitment is in evidence at Petro's Windows-based data center, where the company supports a 60-server MetaFrame environment. In order to support this task, Petro initially used a two-node active/passive cluster of Windows 2000 servers hosting two separate network file shares. As its user population grew and performance began to suffer, Petro's IT department added another two-node active/passive cluster to host one of the critical shares — the home directory share. It was a temporary fix, at best.

The Challenge

The fact is, Petro's IT department was running into a performance barrier. Using the existing approach, the only way to solve the problem would have been to deploy more active/passive clusters. This approach would have meant investing in redundant hardware, breaking up the volume and manually partitioning data across servers.

The Solution

Through Petro's existing relationship with HP, its IT department became aware of PolyServe's File Serving Utility for Windows applications. With File Serving Utility, they realized they could deploy a highly scalable, high performance, fully fault-tolerant file services platform.

Two common benefits of Petro's PolyServe's File Serving Utility are server consolidation and increased system uptime.

Petro has reduced the number of servers allocated to file serving and improved the overall server and storage utilization by consolidating multiple file servers onto a single scalable, fault-tolerant cluster.

PolyServe software constantly assesses server, network and storage health, ensuring applications continue to function despite a failure anywhere throughout the cluster.

Petro Director of Enterprise Energy Drew Salvatore is pleased with the PolyServe product, saying, "We needed a more efficient, more elegant approach to our computing problems. Polyserve was the only solution that provided capacity on-demand computing coupled with operational simplicity and built-in resiliency."

Veritas DGC

QLogic
Aliso Viejo, CA
www.qlogic.com

QLOGIC

Faced with the need to transport and store its massive, complex geophysical images, oil and gas exploration firm Veritas DGC implemented QLogic SANbox2-64 switches that enabled it to store and retrieve these crucial files while freeing up valuable server and disk space that could have lead to performance bottlenecks.

The Challenge

The company also purchased multiple QLogic SANbox 5200s to integrate its new data storage devices with existing units. These moves were done in order to address Veritas DGC's need to access large data files, a process that typically generates multiple copies and was compromising I/O throughput with the existing infrastructure.

The Solution

"With file sizes ranging from mere megabytes to 150 gigabytes, we needed to streamline file portability," declares Dean Campbell, Senior Unix Support Specialist. "The SANbox2-64 is the ideal switch for connecting storage equipment so our customers receive flawless data access. The SANbox 5200 gives us further flexibility and scalability to grow the edge of our storage area network."

The SANbox2-64 combines high port count, modularity and scalability into one low-cost Enterprise-class switch.

"Financially, it came down to which vendor had the lowest cost-per-port," Campbell states. "QLogic came in at least 50 percent lower than its competitors. With the currently installed SANbox2-64s, all we have to do is purchase additional blades to add new storage and hosts."

Currently, Veritas DGC is using 16 ports per switch, but with storage being installed in terabytes, adding to the already existing petabytes, it is obvious that there must be room for cost-effective expansion.

The SANbox 5200 is the only stackable Fibre Channel switch on the market. It features eight, 12 or 16 auto-detecting 2Gb/1Gb ports with incremental upgrade capabilities under its software license. The switch delivers seamless scalability and performance, with a four-pack of 10Gb ISLs for linking switches without wasting user ports.

"We've already helped realize our ROI with data availability," comments Campbell, adding that when the company transfers data files, they are often duplicated and can take up increased disk space. "With the QLogic SANbox switches, we have the needed infrastructure and now we are ready to continue our growth."

Shiloh Industries

Sanbolic, Inc.
Watertown, MA
www.sanbolic.com

[illegible]

sanbolic

Shiloh Industries, which has multiple locations throughout the U.S., recently implemented an improved disaster recovery and server virtualization architecture for its Ohio data center, with two secondary remote data centers located 60 and 150 miles away.

The Challenge

Shiloh needed to implement a cost-efficient platform for its data center applications that included multi-site disaster recovery architecture. In order to affordably meet performance, availability and flexibility requirements, it chose to use virtual servers connected to iSCSI storage. Using this architecture, virtual machines could be migrated between physical machines for flexibility or failover, and data could be replicated across three sites using the iSCSI storage platform utilities.

As a part of this implementation, Shiloh needed to quickly migrate virtual servers between physical hosts. The solution required a file system for Microsoft Windows Servers that would enable active sharing of the file system among all of the host servers. Using the shared file system, Shiloh would be able to simply shut-down the guest OS on one server and start it up on another.

The Solution

Sanbolic Melio File System and LaScala volume manager were selected by Shiloh to provide active-active access to a file system and the iSCSI SAN.

The main data center is now running a range of Windows applications and NetWare file/network services on virtual servers. Sanbolic's Melio FS and LaScala volume manager have been deployed across the core data center on all host servers. Melio FS clustered file system provides active-active access for multiple servers to a shared volume on the EqualLogic iSCSI storage, facilitating fail-over among the virtual and physical servers.

The software has been installed on three separate clusters, one at each location. Each cluster allows sharing of a local copy of the guest server's virtual disk files. This enables a guest server to safely fail over to different host by merely shutting the guest server down on one physical host and restarting on another.

Replication across the data centers is done using utilities on the EqualLogic iSCSI storage system.

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Earned Value Management

What it is, how it works and why your projects need it. By Mary K. Pratt

IF YOUR IT shop isn't using earned value management, you may want to start thinking about it. EVM, which has its roots in the U.S. Department of Defense, is moving into private industry. More important, it's coming to IT.

When used properly, EVM helps team members, project managers and their bosses accurately gauge progress against an established project plan. EVM also enables teams to accurately assess where they'll be in the future, allowing managers to make key decisions on resource allocation or revisions before projects unexpectedly spin out of control.

"When people report percent complete, you might get 'I'm 50% complete,' based on that person's intuitive knowledge. Earned value analysis takes that guesswork out of it," says Robert Leto, director of the IT effectiveness practice at PricewaterhouseCoopers Advisory Services LLP in New York.

The Defense Department has employed EVM for years, requiring its contractors to use it for reporting on federal projects.

So, what exactly is EVM? "It comes with a reputation for being complicated and difficult, but I don't think anything could be farther from the truth," says John M. Nevison, president of Oak Associates Inc., a Maynard, Mass.-based firm that provides consulting and training services related to project management.

EVM is based on several figures that are used in calculations to determine whether a project is adhering to schedule and budget. Results can be measured in terms of money or time.

EVM is not about producing perfect scores. "It's accepted that you're going to vary from your plan," says Marilyn S. McCauley, owner of McManagement Group, an EVM consulting and training firm in Dayton, Ohio. "If I see [perfect scores] every time, someone's cooking the books, because that's not reality."

The point of EVM, she says, is "to see how close we are against what we planned, and when we're not close, to ask, 'Why aren't we there, and what are we doing about it?' "

This is where EVM offers much of its value. If project managers and their executives can see early on that projects are falling behind schedule or going over budget, they can make key decisions about how to proceed, rather than reacting to problems after the fact.

"What earned value does is provide you navigational tools early to let you look ahead to see where you'll be if you do nothing," Nevison says.

Early Warning

Earned value calculations can be done at various points during a project, but the numbers tend to stabilize when you're about 20% through, says Quentin W. Fleming, co-author of *Earned Value Project Management* (Project Management Institute, 2006) and a management instructor at the University of California, Irvine.

"So the point is, if you're 20% through the project, you can predict what the final costs are going to be, plus or minus 10%," Fleming says. "It's a very powerful tool, and here's what's powerful: If you're 20% through a project and you've been authorized $1 million, and your cost efficiency to date suggests you're going to need $2 million to finish the project, then management has decisions [to make]."

An EVM Primer

Earned value management is based on several figures that are used to calculate a project's progress. You can measure in dollars or time.

Planned value (PV): This is the value of all resources needed to do the work to meet the project's objective. Although most project managers calculate PV in dollar terms, some calculate it in terms of time – the number of hours it's expected to take to complete the project.

Let's take a very basic example. We've budgeted $200 to buy, set up, network and test a new system. We've budgeted $50, $75, $50 and $25, respectively, in materials, labor and other costs for those four phases.

Keep in mind, though, that the $50 set aside to buy the system doesn't just cover the cost of the actual hardware and software. It also takes into account the value of time that will be required to find the right system, the time that will be needed to fill out the purchase orders, the time it will take to actually buy the system and so on.

"The basis for earned value management is worked performed, not money spent," says Marilyn S McCauley, owner of McManagement Group, an EVM consulting and training firm. **Our PVs are $50, $75, $50 and $25.**

Budgeted (cost) at completion (BAC): This is the sum of all PVs – the total for all phases. **In our example, BAC is $200.**

Earned value (EV): As our team completes portions of the planned work, we check off that work and the amount of money (or time) it *should* have taken to do it according to the project plan. Project managers calculate EV at predetermined times based on the plan, typically at the end of the company's accounting period, McCauley says.

We've completed Phase 1 – buying the system – within the planned time frame. Check that off as done. **Our EV is $50.**

Actual cost (AC): This can also be measured in dollars or time. In a perfectly executed project, EV and AC are the same. But in our example, let's say we actually used $60 in resources to buy that system. **Our AC is $60.**

Once you have these figures – PV, BAC, EV and AC – you can calculate other numbers that tell you about your progress on a project. Here are some of those calculations:

Schedule performance index (SPI): EV divided by PV for a particular phase of a project. In our example, that's 50/50 = 1, a perfect score for Phase 1, indicating that we're on target for schedule.

"I said I'd do $50 worth of work, and I did $50 worth of work," McCauley says.

Cost performance index (CPI): EV divided by AC. For our project that's 50/60 = 0.83, indicating that we're underperforming for our costs. "For every dollar I'm spending, I'm only getting 83 cents worth of work," McCauley explains.

In a perfect project, the answer is 1. But most projects fall below that because most projects miss their targets.

Estimated (costs) at completion (EAC): BAC divided by CPI. The answer is a forecast value in either dollars or hours that indicates the projected final project costs or time. There are various formulas for EAC, McCauley says, but this is one of the easiest to use. In our example, that's 200/0.83 = 240.96. This indicates that at the rate we're going, the final cost will be $240.96 rather than our planned $200.

Schedule variance (SV): Subtract PV from EV. In our example, our earned value is $50 because we've done the first of our four phases. We bought the system. The PV for that first phase was actually $50. So 50 - 50 = 0. That's a perfect score, so we're on schedule.

Cost variance (CV): Subtract AC from EV. In our example, that's 50 - 60 = -10, indicating that we've overspent by $10. If we were on target, CV would be zero.

– MARY K. PRATT

Despite EVM's reputation for offering insight into project progress, many IT executives aren't yet embracing the discipline, partly because the underpinnings that make it work aren't in place.

"The concept of earned value is really elementary project management. But the problem with many IT organizations is that they don't use rigorous project management methodology," says Dan Gingras, a partner in the information technology leadership practice at Tatum LLC, a consulting firm in Atlanta.

"In order to do earned value management, you have to have a good hudget," he says. "In order to have a good budget, you have to back up one step further and follow a good project management methodology."

Project managers and IT leaders need to accurately define a project's scope and requirements, develop specific work packages and work breakdown structures, and then establish a good budget, says Gingras, who also teaches technology strategy and system design as an adjunct faculty member at Boston University's Metropolitan College.

Moreover, Gingras and others say that employing EVM in projects takes plenty of training. There are books and multiday courses that teach the practice.

So, why go through all this upfront work? Gingras points to a well-known fact: "Significant numbers of projects aren't completed on time or on budget, or they don't deliver what they're supposed to deliver."

EVM can help improve your chances of project success, says McCauley. "The idea behind earned value is seeing what you need and when you need it. It's all about management, and it's all about control." ◆

Pratt is a Computerworld *contributing writer in Waltham, Mass. Contact her at marykpratt@verizon.net.*

Who's Driving The EVM Bandwagon?

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PRATT

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IT supports and controls the applications that run the business.

software

ROBERT MCLARAN

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It's about Trust

WHO'S WHO IN IT

How long have you been in IT? Prior to becoming an IT auditor, I held various positions in IT over 13 years, from programmer to systems programmer, with my last position being a data center manager. I was fortunate to receive a broad exposure in my early years.

What is the most important contribution you make, and how do you make it? There are two areas where I think I contribute. The first is through formal audits. I test and give my opinions on the state of internal controls and then produce a formal report that shares this information — including improvements that can or should be made — with the rest of the company.

The second is through informal consulting. I may stand in a hallway, sit in a cubicle or simply respond to an e-mail with a casual evaluation or an answer to a question. An example of a question would be, "We're thinking of consolidating our 100 Unix boxes down to 10. What do you think the risks might be?" or, "What resources do you have that will help us to develop a penetration-test charter?" We talk about whatever they are concerned about or want to know. Both aspects of the job are important.

What is an internal control? An internal control is any and all the means — tangible and intangible — that can be used to ensure that established objectives are met. This will also include an organization's procedures that increase its efficiency and ensure that its policies are implemented and that its assets are safeguarded. For IT, the main controls that any organization needs to be concerned with — at a minimum — are for access security, problem and incident reporting, change management and application development.

What is the most important IT skill or aptitude you need to do your job? To do it well, I need to understand how technology works, how technology people view their jobs and how IT fits into the organizational picture. That gives me the broader viewpoint I need to suggest improvements. I don't need to know how to do the technical jobs, but I need to understand how they fit into the overall scheme of things. Another aptitude that auditors need is curiosity and persistence. We need to be able to continue to ask questions until we're satisfied with the answer. Persistence is not aggressive and pushy but more along the lines of determined and consistent.

What is the most important soft skill or personality characteristic you need to do your job? Communication skills are critical. It's the people skills and the ability to get along with others — to talk to them at their level (either higher or lower than my own) — that makes them comfortable to talk with me. I could just look at data and procedures and form an opinion, but it would be shallow at best.

IT people really hold the key to a well-run IT organization, and the auditor's ability to get them to talk about their jobs is vital to gaining an understanding of what is really happening. I think that an important personality characteristic is to be approachable. No one wants to talk to someone they find scary or untrustworthy. Being approachable must also imply that you have integrity and [can be trusted with] what they want to say to you.

What is the biggest misconception about what you do? That I am somehow the organizational police looking only for violations (internal control concerns) and then enjoying handing out organizational tickets (audit findings). That's a harsh viewpoint that the profession has tried to step away from for a very long time. We're mostly succeeding, but we have not yet arrived at audit Valhalla.

What do you like best about your job? I have been fortunate to not be limited to IT audit but also perform operational and financial audits. I thoroughly enjoy being free and able to see the entire company and all of its operations. This gives me a broader perspective than if I were just limited to IT alone. That's what I like the most.

What do you like least? I do not enjoy delivering bad news, because sometimes people like to shoot the messenger. Fortunately, this has happened very rarely in my career.

What should other IT people know about your role? That I really am on their side and not an antagonist to their work. I view my role as an objective partner who has others' interests at heart. I really do want to see them succeed, and if I can help them succeed in their control responsibilities, then I have done my job and can go home satisfied at the end of the day. It's all about them and not about me.

What should business people know about your role? Pretty much the same as the IT people. In fact, I don't separate IT people from business people. They have differing specialties and tasks but should be trying to achieve the same goals.

What would enable you to do your job better? If auditors don't have the right tools to make their jobs efficient and effective, then it is always an uphill climb to get the job done well. Important tools are those for data mining, electronic working papers, and centralized issue tracking and repositories, to name three. Adequate training is always important and should be a balanced mix of technical and soft-skills education.

The IT auditor should also try to get broader exposure to other areas of the business and of the audit process, for example, by learning how to do financial audits. The effect of a broader exposure is a greater understanding of the entire business process, and as a result, it makes them more effective in suggesting improvements at the department level.

If you were not an IT auditor, what would you be? That's a tough question. If I were financially able to not work, I'd be volunteering somewhere for some cause. Outside of that, being an auditor has been very good to me, and I'll probably finish my career as one unless there's an ideal job within IT that has my name on it.

How does the future look for your role? The future looks bright. Most organizations can't live without technology and, as a result, must have adequate technology controls in place to ensure the achievement of their business goals. Unless the business community goes back to quill and parchment and the running courier, there will always be a place for the IT auditor. ▪

Interview by Kathleen Melymuka.

All About Alignment

BOOK REVIEWS

Winning
The
3-Legged
Race

■ **Winning the 3-Legged Race: When Business and Technology Run Together**, by Faisal Hoque, V. Sambamurthy, Robert Zmud, Tom Trainer and Carl Wilson *(Prentice Hall, 256 pages, $27.99).*

IF YOU WANT a book that is focused on the alignment between IT and business, look no further. The five authors, along with several contributing authors, draw an analogy to a three-legged race. IT and business are tied together, and their goal is to cooperate with each other and coordinate their "third leg," which can be viewed as an amalgam of strategy, governance, business processes, budgeting, risk management, business partners and the external marketplace.

The authors, who include a mix of academics and CIOs, such as PepsiCo Inc.'s Tom Trainer and Marriott International Inc.'s Carl Wilson, do a credible job of describing the evolution of business technology management and providing anecdotes of real-world successes and failures from which readers can learn. The book is masterfully sprinkled with flow charts, diagrams, text boxes, mini case studies and tips from leading experts, such as F. Warren McFarlan of Harvard Business School, and MetLife Inc. CIO Steven Sheinheit. A must-read for today's IT executive.

GET BACK
IN THE
BOX

■ **Get Back in the Box: Innovation From the Inside Out**, by Douglas Rushkoff *(HarperCollins, 336 pages, $23.95).*

I'VE ALWAYS despised clichés and prefabricated expressions in business. And "think outside tbe box" is right at the top (or is it the bottom?) of the heap.

That's certainly one of tbe reasons why Rushkoff's book appealed to me. But as I began paging through it, I realized that there's a lot more to this volume than my personal disdain for marketingspeak.

Rushkoff contends that business managers all too frequently embrace change and shift the strategic direction of their companies in a mad rush to remain competitive and innovative. Instead, be recommends that corporate executives think "inside the box" in order to stay true to their companies' core competencies and best serve their customers.

Unlike cookie-cutter business-advice books that are filled with mini case studies of customer successes to back up the author's premise, *Get Back in the Box* intersperses historical examples of corporate blunders and accomplishments that are designed to provoke introspection.

For instance, Rushkoff points to how James Dyson, the inventor of the high-end Dyson vacuum cleaner, ignored suggestions from focus groups prior to the product's launch that consumers would be disgusted by having to see the filth that piles up in the machine's transparent collection bin. Instead, he followed his instincts that such a visual "would give people a certain sense of satisfaction after they vacuumed." The feature became a great selling point.

Whether or not you agree with Rushkoff's insights, the book is delightfully written and challenges its readers. Although Rushkoff relies a bit heavily on historical perspective to get his points across, the book will be useful to IT managers who are trying to align themselves with their business peers.

■ **IT Portfolio Management Step-by-Step: Unlocking the Business Value of Technology**, by Bryan Maizlish and Robert Handler *(John Wiley & Sons, 400 pages, $49.95).*

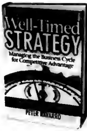
ALTHOUGH MOUNTAINS of books have been written about IT management and even project management, few have focused specifically on IT portfolio management. That's somewhat surprising, given the rising number of blue-chip companies, such as KeySpan Energy Corp. and Lowe's Cos., that have adopted the techniques to fundamentally improve the way they manage their IT investments.

For the uninitiated, IT portfolio management is a set of techniques that IT managers can use to effectively place a Buy, Sell or Hold on IT investments such as software, similar to what a financial investor would do with stocks. Some organizations use IT portfolio management tools and techniques to rank IT projects using criteria such as anticipated business value and return on investment.

Maizlish, chief technology officer - program team at Lockheed Martin Integrated Systems and Solutions, and Handler, an analyst at Gartner Inc., offer a very detailed and pragmatic approach to IT portfolio management. The authors' expertise is apparent throughout the book, including in useful tips on how to handle the software vendor selection process.

As the authors point out, IT portfolio processes don't make decisions, people do. So they wisely devote a fair amount of discussion to people and cultural issues. And given the increased focus on regulations that IT managers must contend with these days, the authors also provide helpful guidelines on linking IT portfolio management strategies with Sarbanes-Oxley Act compliance and IT governance efforts.

Maizlish and Handler have put together a useful guide for novice and veteran IT portfolio managers.

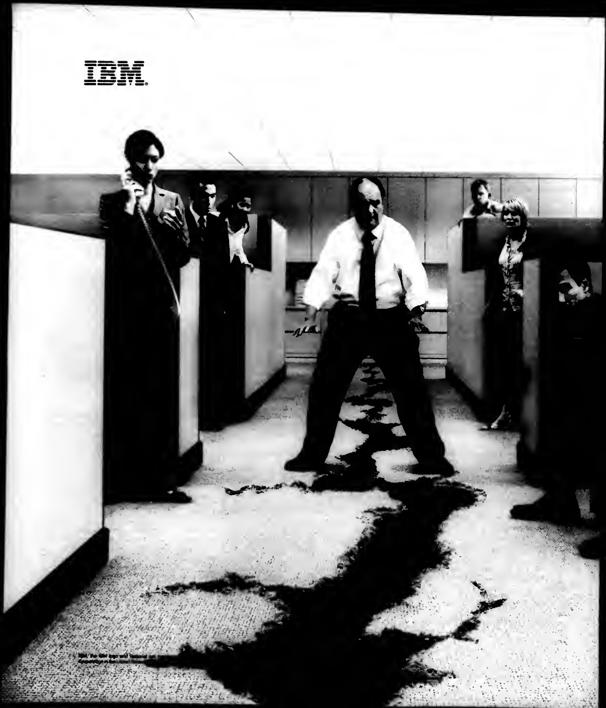


■ **The Well-Timed Strategy: Managing the Business Cycle for Competitive Advantage**, by Peter Navarro *(Wharton School Publishing, 272 pages, $27.99).*

WELL-RUN BUSINESSES like General Electric Co. manage to prosper during economic downturns. But being able to grow profits — much less remain profitable — can be considerably more challenging for companies in so-called cyclical industries that are dependent upon overall economic growth, such as chemical and automobile manufacturers.

Navarro, a business professor at the University of California, Irvine, illustrates how both recessionary and expansionary turning points in the economy can offer profit opportunities in different industries. Even though the book is light on the role that IT departments can play in helping to support businesses through economic swings, it's useful reading for IT managers who are determined to help support both cyclical and noncyclical businesses. ◆

Reviewed by Thomas Hoffman.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_INFRASTRUCTURE LOG

_DAY 19: The business is, uh, coming apart. I.T. isn't in sync with the suits. No one's sure what they need to do. It's totally out of control. Can things get any worse?

_DAY 20: It got worse. Gil fell into the crack. Maintenance needed a GPS device and a hundred feet of rope to rescue him.

_DAY 24: I've found a way to take back control: IBM Rational. Now we have a platform that lets us govern the entire software development process and align it with our business goals. Everyone knows their jobs, everyone works together. We can manage all our offices' development teams and ensure our software's in compliance. It'll even help implement a service-oriented architecture which will make us more flexible. Can you say win-win?

_Everyone's glad the crack is gone. Gil says his nightmares about "the dark place" are practically over.

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EXEC TRACK

DiamondCluster Hires New Partner

CHRIS C. O'BRIEN, former CIO for the city of Chicago, has been named a partner in the public-sector practice of IT consulting firm DiamondCluster International Inc. O'Brien has been a member of Mayor Richard M. Daley's cabinet for the past six years. In his new position, O'Brien will work primarily with city and state government clients.

Ingram Named CIO At Argonaut Group

ROBERT C. INGRAM III was named senior vice president and CIO, a new post, at Argonaut Group Inc., a San Antonio-based national insurance underwriter. He will report to CEO Mark E. Watson III. Ingram previously was a director at IBM and an associate partner at Andersen Consulting.

Vitesse Chooses Ho, Browne for IT Posts

Vitesse Semiconductor Corp., a Camarillo, Calif.-based supplier of Ethernet products to resellers, announced the appointments of **CHI FAI HO** as chief technology officer and **PAUL BROWNE** as vice president of engineering for its Ethernet products division. Ho, who will be responsible for advanced technology, most recently was vice president of engineering at Tidal Networks Inc. Prior to that, he was a senior director at Nokia Corp. Browne joined Vitesse from 3Com Corp., where he was most recently senior director of engineering.

Ventresca Joins Charles River Labs

Charles River Laboratories International Inc., a Wilmington, Mass.-based maker of systems to facilitate the pharmaceutical development process, has appointed **NICHOLAS VENTRESCA** corporate senior vice president and CIO. Prior to joining Charles River Labs, Ventresca was a vice president in business technology at Pfizer Inc.

PAUL GLEN

Learning With Peers

IF YOU WANT TO GROW as a leader or help others to become leaders, it's important to think carefully about the process of learning.

Have you ever been in a great conversation and been surprised by something you said — whether it was your own insight, your own language or the source of your comment?

These events happen to me every once in a while and are the source of some of my most cherished learning. And the things I learn in these conversations often become the bedrock of my understanding of a range of ideas. They tend to be things that reorder my thinking, make connections between ideas I previously considered discrete or unearth values that are held dear but were previously unarticulated.

PAUL GLEN is the director of the Developing Technical Leaders program (www.developingtechnicalleaders.com) and author of the award-winning book *Leading Geeks: How to Manage and Lead People Who Deliver Technology* (Jossey-Bass, 2002). Contact him at info@paulglen.com.

Such epiphanies are often followed by a quick reaction. "Who said that?" or "Where did that come from?" or "I didn't know that I believed that."

These conversations are usually followed by exhaustion, satisfaction and reflection. It's almost as if mental energy were converted into the matter of ideas and everyone involved was drained in the process. The Promethean moment passes into admiration of a new thought.

I've noticed a few things about these conversations. Most of them share some common characteristics.

Everyone involved seems to enter a state that psychologist Mihaly Csikszentmihalyi has dubbed "flow." Time seems to stand still as everyone loses himself in the challenge of keeping up with the discussion. Everyone feels challenged to think in new ways and to pay attention to the issues at hand.

Ideas take center stage. If the participants brought individual agendas to the conversation, those seem to fade and give way to the excitement of following the flow of ideas. Social posturing drops out.

Many conversations, especially those at work, have subtexts of swagger. People try to establish dominance relationships, prove their superior intelligence or reinforce formal social hierarchies. But in these conversations, pretensions are temporarily put on hold.

And usually these conversations take place within or between groups of peers. I don't remember ever having this sort of experience during a lecture from some expert, whether that was a learned professor, a boss or a sage. Mind-blowing insights usually seem to come from interchanges among fellow explorers, not from the passive reception of information. Even the best personal feedback rarely reorders thinking in this way.

This is the experience of learning with peers — not *from* them, but *with* them. And the opportunities for this are much too rare. Several obstacles seem to get in the way, especially when managers may have to expose weaknesses to learn from them.

Too often, we think about learning as a solitary activity or a passive one. We focus on receiving information, mastering conceptual material or building some new skill. Books, lectures, e-learning and, yes, even magazine articles reduce learning to a solo sport. Of course, you can learn things alone, but significant insights seem to grow out of interchanges with others.

Managers rarely engage in these peer-to-peer exchanges. Sadly, too often, managers consider their peers to be only competitors. Peers are competitors for promotions, for budgets, for talent and for the attention of those already in power. In the corporate world, viewed solely through this lens, a conversation about ideas with peers would be insane. One would risk sharing important information or exposing a personal weakness that could be exploited by opponents. So, many managers forgo their most promising source of insight and advancement.

And who has time for ideas at work? We're all too busy doing things to stop and think about them. Reflection is for retirement. Understanding is for sissies. Thinking is for ivory-tower academics. Even long sentences are seen as the enemy of profit. Activity breeds success.

But in fact, facilitating cooperation in activity and learning is part of the leader's job. Things are not black and white, and managers must balance competition with collaboration in order to be personally and collectively successful.

When it comes to insight, there are things that can be learned but can't be taught. Sometimes, the best thing a leader can do to develop subordinates is not to tell them what to believe, but to create an environment in which they can figure out what they believe for themselves.

Next month, I'll write about how to create an environment in which peers learn from one another. But I'd like to include your ideas. E-mail your experiences of learning with peers to me at *info@paulglen.com*. ▪

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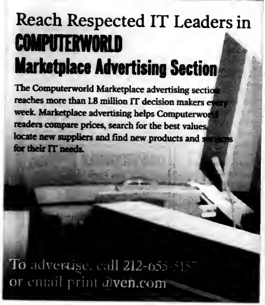

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Nissan

enhancement work that IBM previously handled to offshore services firm Satyam Computer Services Ltd.

"We were happy with the services [we were getting] from IBM, but the world had changed," Greenberg said in an interview last week. Increased competition among outsourcing vendors and the emergence of offshore firms like Satyam have made multisourcing a more logical approach for Nissan, he said.

And bringing IT functions such as business analysis, program management, and application and infrastructure architecture planning back in-house should help the company better align its technology with business needs, according to Greenberg.

Double Dealing

Nissan North America, which plans to relocate its headquarters from Los Angeles to Nashville this summer, announced a five-year application services deal with India-based Satyam two weeks ago.

Earlier last month, Nissan disclosed a new six-year IT infrastructure outsourcing contract with IBM that calls for extensive mainframe, database and server consolidation, plus a shift to a more standardized operating environment.

The value of the two deals wasn't disclosed, nor did Nissan detail its plans to restart some internal IT work as part of the two announcements.

Nissan, which has about 25,000 end users in North America, "probably outsourced too much" to IBM in the first place, Greenberg said. "I think this is something that goes back and forth within the IT world when you're outsourcing: How much?"

He added that in his view, the commodity elements of IT should be outsourced but "the value-generation elements . . . really need to be very close to your business."

As a result of the shift in strategy, Nissan's IT department is in hiring mode. Greenberg also has to find new workers to fill the positions of people who have decided not to relocate to Nashville. He declined to disclose the oumber of employees that he expects to add in IT, saying only that it will likely be "significant."

Multisourcing is becoming more prevalent as companies adopt a best-of-breed approach to outsourcing. In the biggest example thus far, General Motors Corp. in February announced outsourcing contracts with Electronic Data Systems Corp. and five other vendors that shifted some of its IT work away from EDS and specified standard IT processes for all of the companies to follow.

On the other hand, bringing outsourced IT work back in-house remains relatively rare, some analysts said.

In late 2004, J.P. Morgan Chase & Co. canceled a seven-year, $5 billion outsourcing contract that it had signed two years earlier with IBM. And last year, Sears, Roebuck and Co. ended a 10-year, $1.6 billion agreement with Computer Sciences Corp. after just 11 months. But both J.P. Morgan and Sears canceled those contracts after being involved in large mergers that expanded their internal IT capabilities.

"In general, we don't see that many firms pulling back in work that they've outsourced," said Stan Lepeak, managing director of Equatioo Inc., an outsourcing research and benchmarking firm that's owned by New York-based consulting firm EquaTerra Inc.

Lepeak and other analysts said that companies such as Nissan initially went with a single outsourcing vendor for some practical reasons.

> **"The challenge here is [building] a solid management team and all the appropriate skill sets underneath. That's the hardest problem.**
>
> **ROBERT GREENBERG**, CIO, NISSAN NORTH AMERICA

"There weren't as maoy providers back then, and the opportunity to multisource was just less viable," Lepeak said. "And organizations were less experienced with outsourcing."

But as large companies increasingly turn to multisourcing, internal IT management capabilities will become vital, said Peter Allen, managing director of Technology Partners International Inc. in The Woodlands, Texas. Businesses with multiple outsourcing vendors need to ensure that they have "sufficient architectural leadership to mend the seams between the various providers," Allen said.

William Martorelli, an analyst at Forrester Research Inc., said that by retaining or reviving strategic IT management capabilities, compaoies are able to approach outsourcing "from a position of strength."

But re-creating a more complete IT department within Nissan, and doing it quickly, won't be easy, Greenberg acknowledged. "The challenge here is [building] a solid management team and all the appropriate skill sets underneath," he said. "That's the hardest problem." ■

MORE IN THIS ISSUE

Business process outsourcing is becoming more mainstream but still faces hurdles, say conference attendees. **Page 12**

Outsourcing Market Now Favors Multisourcing, CIO Says

Nissan North America CIO **Robert Greenberg** spoke with *Computerworld* last week about the new IT management strategy he's implementing. Excerpts from that interview follow.

What's the direction that you've set for Nissan's IT operations? Let me give you a little bit of history. About six years ago, Nissan outsourced IT within North America to IBM. I came on board, approaching a year and a half ago, and looked at where we stood with that agreement and analyzed it. The world has changed pretty substantially since the original outsourcing was done, both in terms of the competitiveness of the outsourcing marketplace and the increased use of offshore vendors.

Looking at multivendor sourcing really seemed to make sense for us. So the way we went about doing that was to take what was a sole-source agreement for both infrastructure and application maintenance and enhancement services and break it apart and put it to bid. We were happy with the services [we were getting] from IBM, but the world had changed.

Did you have any reservations about taking a multisourcing approach? We did. One of the things that also took place with the original outsourcing to IBM was we probably outsourced too much. I think this is something that goes back and forth within the IT world when you're outsourcing: How much? We had outsourced a lot of the business analysis activity, the program management activity, and the application and infrastructure architecture activities. We decided to bring those back internal, so we're going though a fairly large hiring effort at the moment.

One of the risks that we looked at was in breaking up the services that we buy. [Another was] should we have been trying to have two competing vendors within, let's say, the application maintenance and enhancement space. We decided that when you actually looked at the applications portfolio and at the emerging capability of our internal organization, that was a risky approach versus the amount of incremental savings that we might obtain. So we decided to go just with the infrastructure contract and an applications contract.

What does bringing some of your IT functions back in-house involve? There is massive hiring, and there is significant training, and that training has to take place also in the context of moving these applications offshore. So there are fairly significant activities associated with knowledge transfer from the existing IBM staff to Nissan personnel as well as Satyam personnel.

What do you gain from this, IT-wise? In terms of the deal constructs, there are very significant savings. In terms of what we gain from a business-linkage standpoint – how the IT organization creates value for the business – it's much easier because the linkages exist within the [company], as opposed to within a third party.

Do you feel that you're improving your business alignment, then? Absolutely. It's a matter of building the knowledge internally [that] can be used to help drive the business activity, which is much harder when a business analyst function is sitting within a third party.

And you're actually saving money by moving those functions back in-house? In terms of the entirety of the deal, yes.

– PATRICK THIBODEAU

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FRANK HAYES ▪ FRANKLY SPEAKING

Patent Pain

THIS is the way the real world works: A vendor creates a product that happens to use someone else's patented invention without permission. We buy the product. The patent holder sues the vendor. A jury decides that the product infringes the patent. A judge threatens an injunction to stop sales of the product. Then the vendor writes a big check to the patent holder for a license, changes the product so it doesn't infringe the patent or stops selling the product.

The first choice costs us money. (Customers are where vendors get the money for that big check, remember? They pay, so we pay.) The second and third choices cost us pain, effort, time and money.

And you know which one we always like better.

Case in point: On April 11, its next "patch Tuesday," Microsoft will ship out a patch that will break Internet Explorer. Not completely, of course; the only thing that will change is how IE handles "dynamic content" such as Flash animations and QuickTime video. Right now, that content can run automatically on a Web page. After the patch is applied, a "tool tip" dialog box will pop up first.

At least that's what will happen with Web sites that haven't been tweaked to handle the patch. Microsoft has been publishing work-arounds since last December, and Adobe and Apple have developed fixes of their own. Web sites and Web-based applications that have been adjusted will work the same as always. Only sites that haven't changed will break — and then only a little bit.

Or so we hope.

Why is Microsoft doing this? Because in 1999, Eolas Technologies sued the company for patent infringement. In late 2003, Microsoft lost the lawsuit. Then it lost every appeal and failed in its effort to get the patent office to throw out Eolas' patent. For two and a half years, Microsoft has stalled on making changes to IE so it would no longer infringe. This month, the clock runs out, and IT shops that haven't already made their fixes will have to get ready for the pain, effort, time and money.

Now compare that with the finale of the recent BlackBerry scare. One day, millions of BlackBerry users were looking at installing a patch to change the way their e-mail was delivered. Then BlackBerry maker Research In Motion announced that it had paid $612 million to patent holder NTP, and the problem was gone.

That seems like ancient history, doesn't it? But it was on March 3 — exactly one month ago.

We like it when vendors wave a big check at a problem and make it go away. Sure, we'll foot the bill if it means the result is a clean, simple, effortless (for us) solution.

In contrast, we'll be dealing with the backwash from Microsoft's IE changes for months. We'll have to field help desk calls from users, train developers to write Web pages differently and upgrade tools so they no longer generate the problematic code. And we'll have to find and change all the places where we use Flash and QuickTime and other dynamic-media plug-ins.

If we're lucky, that's as bad as it gets. If not — if our developers have done overly clever things that depend on the way IE used to handle this content — we may have broken Web applications, have a lot more work on our hands and have business-side bosses screaming about online catalogs that are broken and orders that have stopped coming in.

No wonder we're happier when vendors throw money at problems to solve them.

FRANK HAYES, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

Does all this mean Microsoft made the wrong decision by not paying off Eolas? Not necessarily. Microsoft chose to replace the offending technology after paying $521 million for past infringement. Nobody knows how much it would cost in the future for Microsoft — in other words, us — to do it the other way. But that choice is going to cost us a lot more than money.

And if you still have any doubts about why, in the real world, using a big check to make patent problems go away is so appealing — well, we're all about to find out. ▪

No Half Measures Here

This user's PC is going haywire. Every time she tries to type, the cursor jumps around the screen. Rebooting doesn't help, and neither does swapping out the keyboard. "She didn't use the mouse much, but I noticed that when I did, the pointer instantly jumped to the end," says troubleshooting pilot fish. "That was when she told me this started after she replaced the wireless mouse's batteries. I then spun the scroll wheel on the mouse and the problem stopped instantly. Turns out she turned it over to install the batteries and left the scroll wheel a half click stuck between two resting spots. The mouse assumed she wanted to scroll down."

SHARK TANK

It's Her!

IT security pilot fish detects an employee accessing pornographic Web sites and calls the user's manager — it's cause for automatic termination at this company. As usual, fish prints out examples from the site so the manager knows the employee isn't being targeted unfairly. But there's no doubt when the manager sees the pictures. "Yep, that's her," he says. Sighs stunned fish, "The employee was posting pictures of herself on the Web site. So much for pleading, 'I went to this site in error.'"

Rat Race

Our optical mice are controlling other users' computers, users tell pilot fish. That can't be, says fish, but user is adamant and finally suggests, "I guess we should have purchased the laser mice instead." Wait, asks fish, is there a wire attached to the mouse? No. Turns out the boss found deals on wireless optical mice and bought them for five department admins who sit next to each other. Reports fish, "I changed the frequencies of the mice, and the users were very happy."

Shhh!

Computer room has a water-leakage problem, so operations manager buys sensors to alert operators when there's water under the floor. "Unfortunately, the ops manager went with a cheap sensor," groans pilot fish there. "The only way anyone would know the alarm was going off was to remove the floor panel over the alarm."

Color Blind

User calls help desk pilot fish [illegible] that a color laser printer is out [illegible] "I [illegible] [illegible] busy and [illegible] to the [illegible] says fish. [illegible] of the question, it's the [illegible] replaced. [illegible] about this, she [illegible] end, like the printer."

SPICE UP SHARKTANK! [illegible] of IT life at sharky@computerworld.com. You'll score a sharp Shark shirt if I use it. And check out Sharky's blog, browse the Sharkives and [illegible] home delivery at computerworld.com/sharky.

CHANGE = STABILITY

If there's one constant in business today, it's change. But large or small, internal or external, change doesn't have to impede IT service delivery. Think of change as an opportunity for IT to satisfy fluctuating demand while maintaining a stable, productive work environment. With integrated CA software solutions for service management and service availability, you can unify and simplify the way you manage complex IT services across the enterprise. Anticipate and prioritize shifting demand. Automate processes to ensure timely delivery and reliability of service. And leverage industry best practices such as ITIL. It's all possible with our unique approach to managing technology called Enterprise IT Management (EITM). To learn more about how CA solutions can stabilize change to create a true service-driven IT environment, visit **ca.com/deliver**.

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